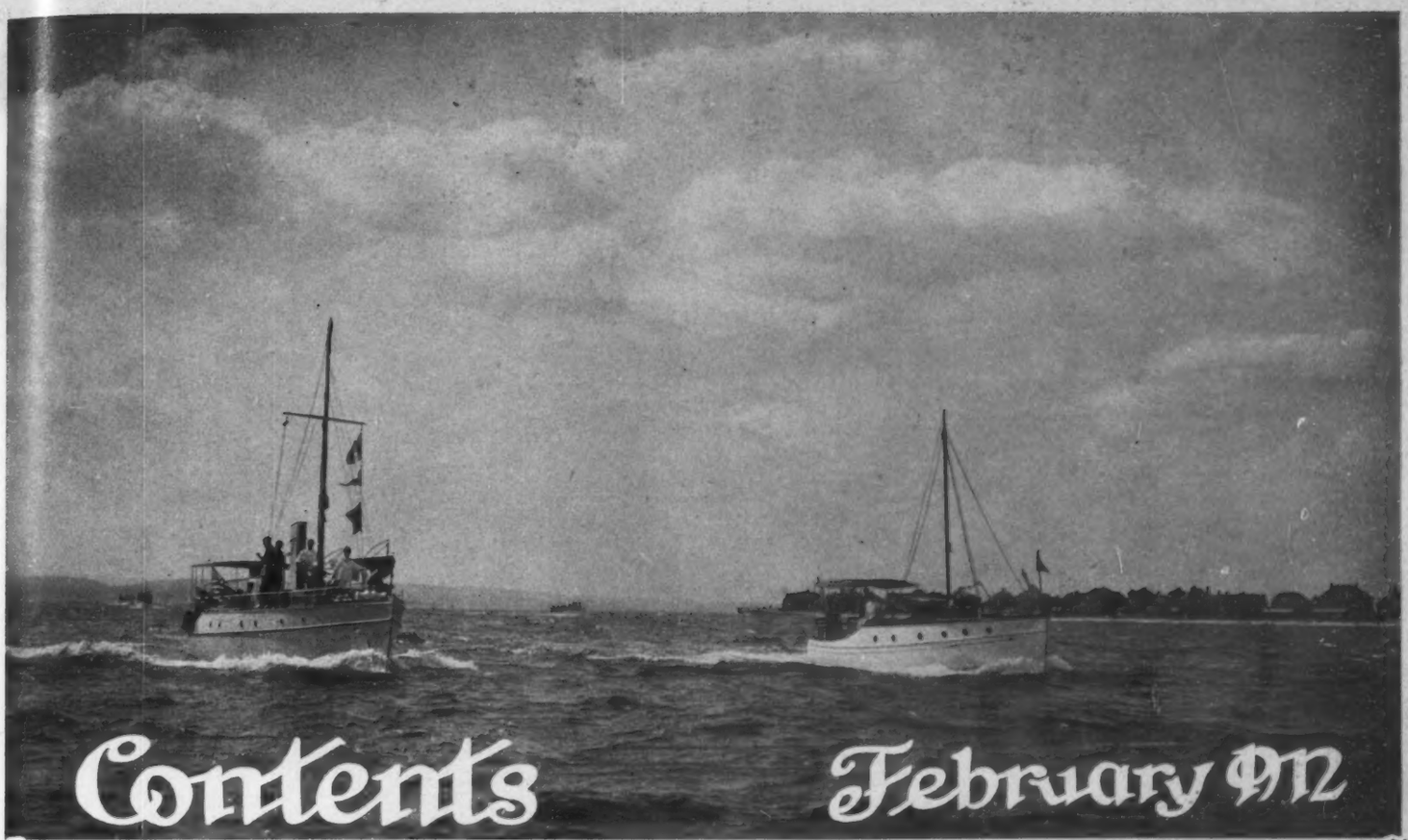

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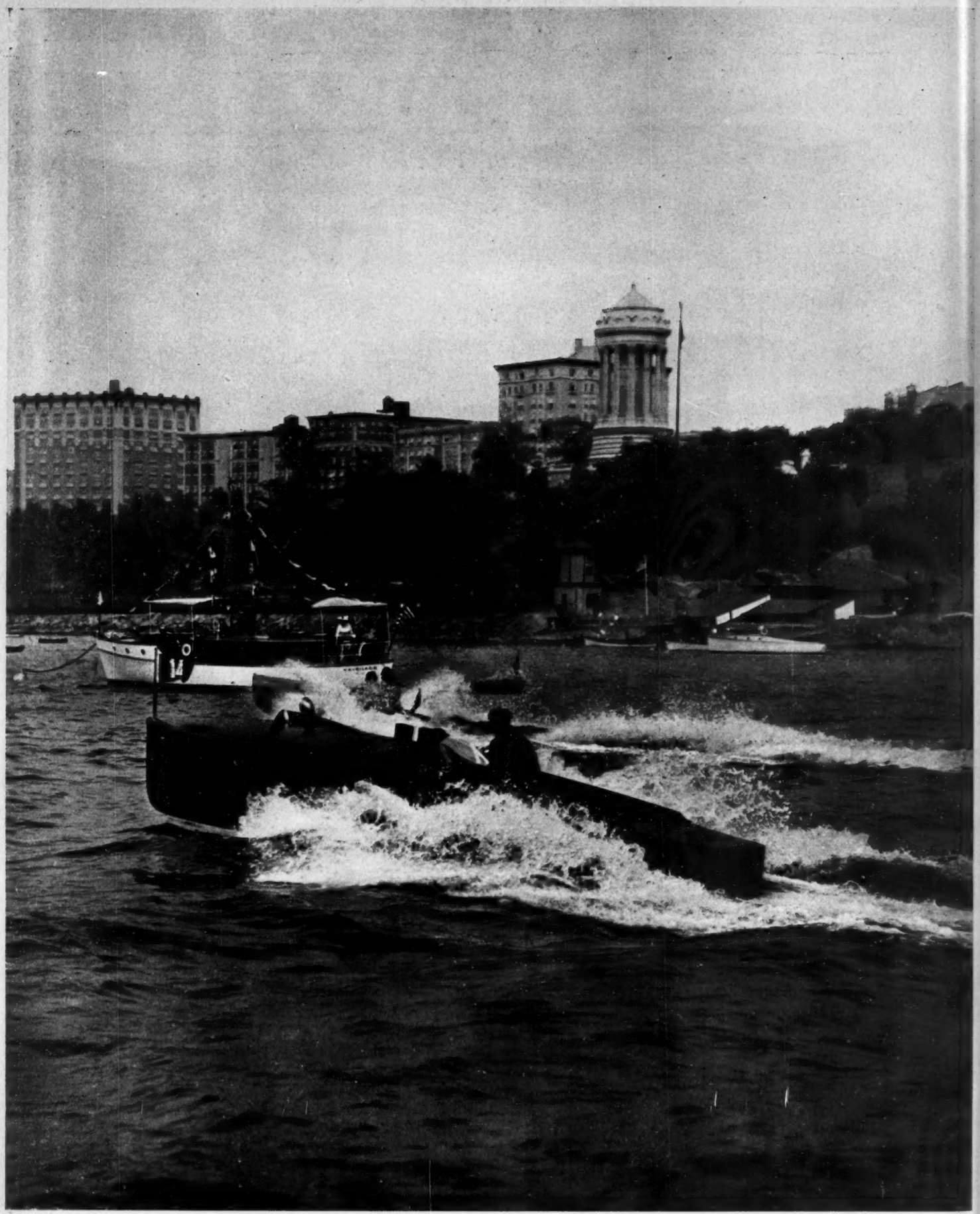

THEY'RE OFF! PETER PAN IV AND VITA RACING ON THE HUDSON.

YACHTING

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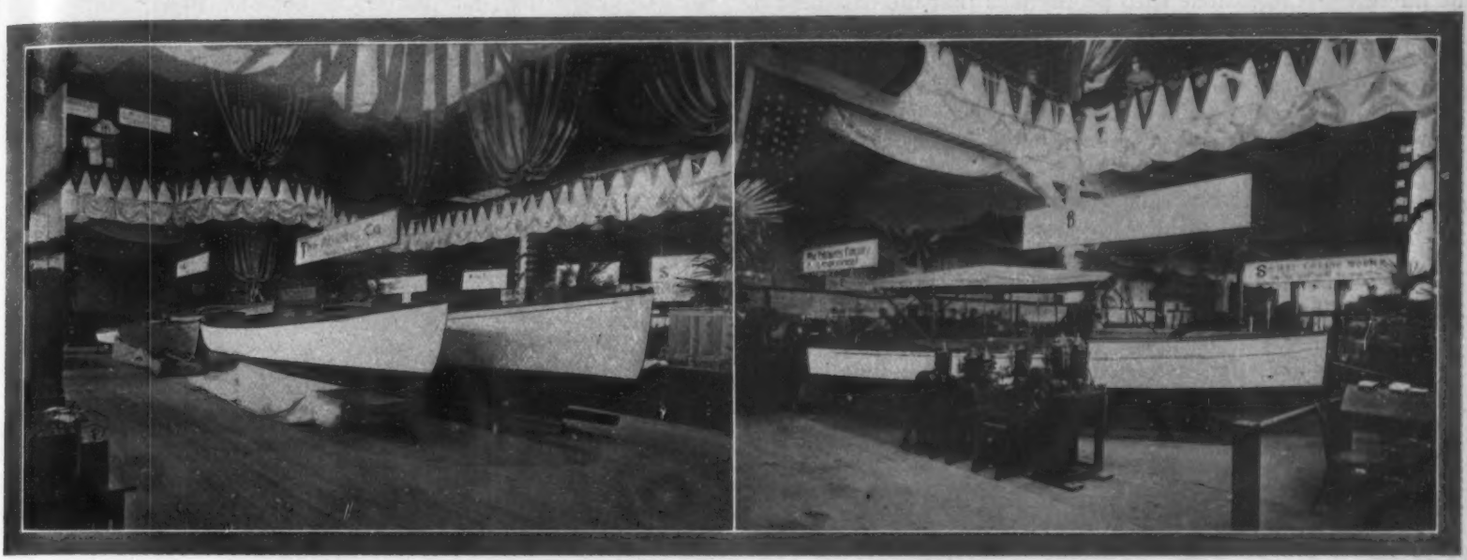


GENERAL VIEW OF THE 1911 BOSTON MOTOR BOAT SHOW.

The Ninth Annual Boston Motor Boat Show

A BRIEF REVIEW OF THE DEVELOPMENT OF MOTOR DRIVEN CRAFT AND OF THE INTERNAL COMBUSTION ENGINE FOR MARINE PURPOSES. WHAT THE BOAT SHOWS HAVE DONE IN THIS DIRECTION. OF GREAT VALUE TO BOAT OWNERS AND USERS.

HAPPENINGS in the limbo of the past are always shrouded in a certain degree of haze to the average mind, and it will probably come with something of a shock to the majority of those who own motor boats or depend upon them in any way to recall that less than ten years ago there was hardly a successful craft, judged by present standards, operated by an internal combustion engine. So rapid has been the growth of the sport, so great the improvement in both engine and hull, and so much have we learned to depend on this kind of power, that it seems as if years must have been required to bring about this consummation and to have built up the great industry to supply the demands of commerce and pleasure, instead of a short decade.

But ten short years ago the internal combustion motor for marine use (and even as applied to automobiles), was an uncertain piece of mechanism, seemingly possessed of an inordinate desire to "lay down" when it was most wanted; and a man who owned a craft propelled by this power was looked upon as one who courted an early demise, and was subjected to many kinds of ridicule and obloquy. The naphtha and alco-vapor motors were then at the height of their popularity and were practically the only kind of power for marine purposes other than steam.

In those early years most of the efforts of the developers of this new power were centered on the automobile as having greater commercial possibilities and, barring a few loyal spirits who plodded faithfully to develop it for water craft, but little attention was paid to perfecting it for marine use.

While motor cars and engines were still in a crude state, yet a sufficient amount of success had been achieved some ten years or so ago, to make possible a successful exhibition of the product of the infant industry with a view to showing the public what had been accomplished, and demonstrating the practicability of the gasolene motor for this purpose. The object of the show was twofold—to interest the public in the new sport and to advertise the wares which the various exhibitors manufactured.

The success of the early automobile shows caused those engaged in the manufacture of motor boats and engines to discuss the possibility of a motor boat exhibition, but there was not then enough enthusiasm to warrant the attempt being made to hold a special show. However, there were enough pioneers among the designers and builders of motor driven craft to get recognition in connection with the automobile show held in Boston, nine years ago, in 1904, in Symphony Hall, where a small but unique exhibition of marine engines and motor driven craft proved quite an attraction, and the success achieved in interesting boat users and lovers of the water, and in actual sales and orders convinced these pioneers in the field that there was a great future in store for the industry.

During the following year a number of new engines were designed and patented and many of the naval architects who had heretofore been designing steam driven craft, turned their attention to motor boat plans, so that the next year, 1905, saw a number of concerns actually engaged in producing stock models and motor boats to order. That year an automobile show was held in Mechanics Building, Boston, and at the urgent request of the officers of a newly formed Boat and Engine Association the entire basement of the building was given over to the exhibits of motor boats and engines. For the following years, 1906-1907, the Boat and Engine Association was content to remain as a part of the big automobile show and in a measure lost its identity, though the development of marine engines was going steadily forward; and instead of an uncertain piece of mechanism that was possessed of an innate cussedness that kept the heart of its owner constantly in his thorax listening for the cough that indicated a desire to quit, engines were being turned out that were so reliable that races for power-driven boats from New York to Marblehead and to Bermuda were being promoted, and were successfully run.

However, the exhibits of engines and boats were so widely different from those of automobiles with which they were held, and the motor boat and engine show began to arouse so much public interest and to assume such proportions that the basement of the building became far too small to properly house it. In 1908, Mr. Chester I. Campbell, who had managed all the Boston shows heretofore, decided that in order to properly care for this rapidly growing industry it would be necessary to hold an independent show, using the big halls of Mechanics Building in addition to the basement.

Improvements were also being made in hull design, and boats were being turned out by naval architects with a view to meeting the requirements which the new power imposed, instead of the abortions that the boat builder had evolved from local sailing and steam craft, which were the only boats he knew.

A seaworthy, comfortable and easily driven craft was now to be had, and these boats attracted great attention wherever seen. It was recognized early that the exhibits of boats held the interest of the public and brought visitors to the shows; and manufacturers of boats, instead of confining their efforts to the small open launch with a deck around her or a small cabin or cuddy forward, were turning out beautiful speed craft with high powered engines, and staunch and handsome cruisers with good accommodations, and were sending them to these shows. The exhibits of boats became more interesting with each succeeding year and only the limit of space within Mechanics Building prevented the showing of boats beyond forty feet or so in length.

ENGINES FOR EVERY SIZE AND TYPE OF CRAFT.

With the jump into popularity of this type of craft the demand for adequate equipment for them built up another industry for the manufacture of motor boat and engine accessories. The old equipment which was sufficient for the sailing craft did not at all meet the requirement of a power driven boat. Whistle outfits, steering gears, bilge and power pumps, special running lights, electric cabin lamps, etc., all had to be designed and made up. The engine needed electrical equipment, reverse gears, special propellers and the numerous other items that go to make up the perfect unit; so that in addition to the boats and engines, the accessories exhibit at every show was constantly growing and finding favor in the eyes of boat owners and those who desired to become owners, and a large part of the space at a show had to be devoted to this branch of the industry.

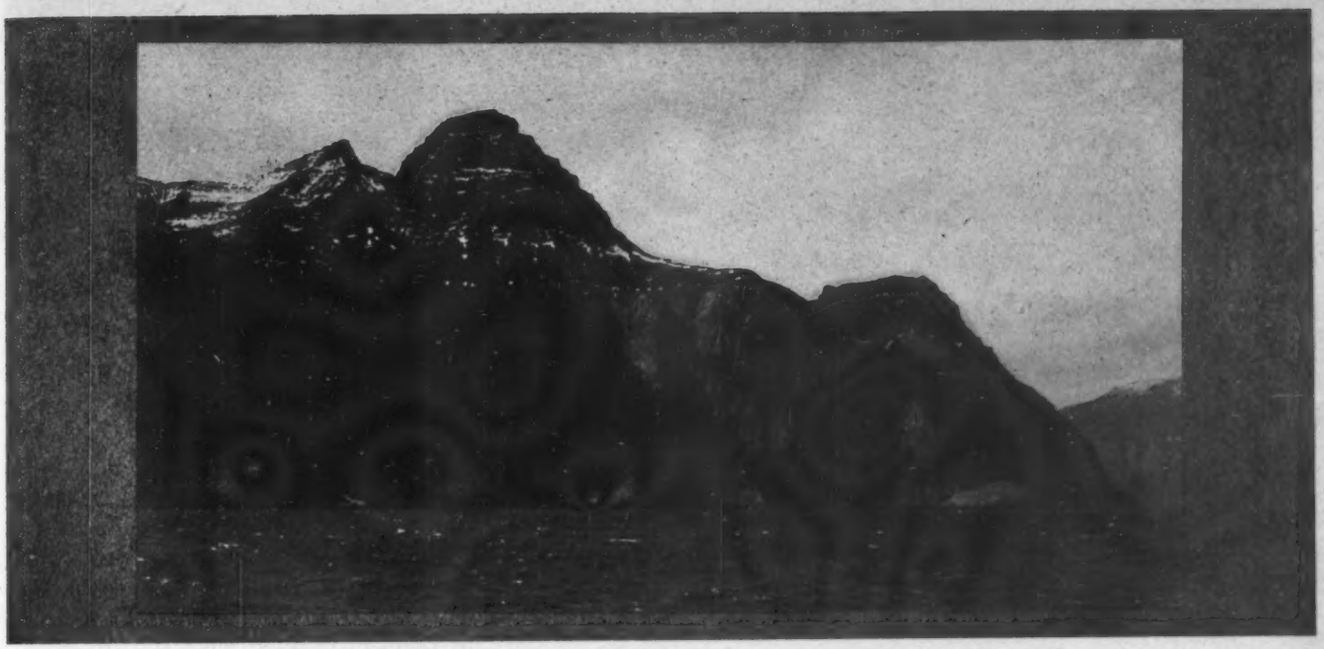
The last two motor boat shows held in Boston have been really educational expositions, for the displays, especially in the accessory departments, had grown to amazing proportions and proved interesting and instructive to motor boat owners. These exhibits included novel lighting plants which not only could be used on board the boats but in the home as well. From a few makes of serviceable internal combustion engines the progress has been so rapid in the design, refinement and improvement of this type of power that where formerly the different makes could be counted upon the fingers of the hands, hundreds of different styles of marine engines and motors for all purposes can now be inspected at a motor boat show.

Another thing that these shows accomplish which could not be compassed in any other way is the bringing together of manufacturer and user in a personal way that allows an interchange of ideas and a broadening of the viewpoint of each. The manufacturer can frequently impress upon the user the value of certain points in gas engine design and operation, and the reasons for them, while in turn he may get many valuable hints as to special requirements for various types of boats which experience has taught the user. For no engine is so perfect that it cannot be improved in some way, and the manufacturer who stands idle while others are seeking to perfect will soon find his products slipping behind the standards of the times.

From suppliants for recognition in connection with the automobile show, only nine years ago, to the dignity of an independent exhibition which holds its own in public favor, is the story in brief of the National Motor Boat and Engine Show which Boston inaugurated.

This year's Boston Show not only promises to tax Mechanic's Hall to the limit of its capacity to house the various exhibits, but also to be the most interesting from the standpoint of a boat owner or prospective purchaser that has ever been held. A look at the account which follows in the Special Show Section on pages 124 to 152 of the various exhibits of boats, engines and accessories that will be seen there, will show why this is so. In addition to the list of exhibits there will also be found here a review of the products of 1912 of those manufacturers or builders, who, for some reason do not find it possible or advisable to exhibit here. It is our aim to make this supplement as complete a review of new designs in boats, engines and accessories as is possible.

Mr. Chester I. Campbell will manage the Boston Show this year as he has done in the past. With his long experience and knowledge of what is demanded, the success of the 1912 show is assured.



A FEW MILES NORTH OF CAPE MUGFORD ON THE LABRADOR. THE PEAK IS 3,000 FEET HIGH.

To Baffin Land in a Motor Boat

A THOUSAND MILES ALONG THE EXPOSED LABRADOR IN A 35-FOOTER. THROUGH HUDSON'S STRAIT TO THE BAY WHERE THE GREAT NAVIGATOR LOST HIS LIFE. EXPLORING BAFFIN LAND.

PART II—FROM CARTWRIGHT TO CAPE MUGFORD.

By J. T. ROWLAND.

CAPE MUGFORD.

THE next trek after leaving the Hudson's Bay Company's Post at Cartwright is to Indian Harbor, in the islands on the north side of Hamilton Inlet, where one of Dr. Grenfell's hospitals is located. This is about a 50-mile run. I find it very succinctly described in my journal, thus:—

"July 26th. Wednesday. Sail and power to Indian Harbor. Beautiful day. Wind fresh off shore. Fine run. Leave Cartwright after breakfast. Arrive Smoky Tickle 4:30 p.m. Then engine goes to Hell. Anchor just outside Indian Harbor (in East Tickle). Towed up to anchorage off hospital in evening by trap skiff. Awful gloom."

The following day restores our spirits, however:—

"July 27th. Bob works all day on engine. Replaces bearings and gets new connecting-rod in forward cylinder. *That* can't let go again, anyhow. Get oil and water and some supplies on board. Ready for sea again by night. Have supper at the hospital, whereby Daws gets a 'spell.'"

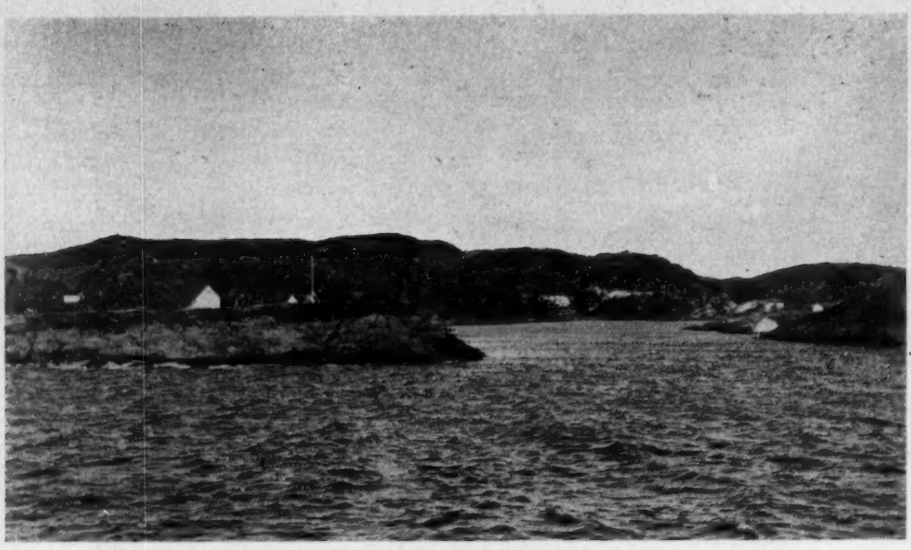
There are, on every voyage, occasions—a sunrise or sunset, a storm or glorious night—which impress themselves indelibly upon one's memory and more than make up for the drab unpleasantness of fog and drizzle. Such was the morning on which we left Indian Harbor. I shook myself free of the warm blankets at first daylight, and the crisp morning air outside started the blood into brisk circulation. It was a red letter day, in any case, since, from this point north, the coast was to me Meta incognito.

A low morning mist hung over the dark harbor water, curtailing in vague obscurity the hulls and lower masts of the clustered fishing vessels and the rustic fish stages and low buildings on the landwash. Overhead a few of the brighter stars gleamed in the dome of the clear northern sky, while to the northwest a shred of aurora still lingered, like some faded beauty, loath to surrender the field of late conquests.

BEACHED FOR REPAIRS AT CARTWRIGHT.

But the crowning glory; how describe it—the crimson and gold which streaked the eastern horizon and heralded the advent of the Conqueror, Day? The glory of elemental things means little to us moderns, simply because we so seldom witness it. A sunrise like this in the north, a sunset on the western plains, a thunderstorm in the mountains,—any of these things is enough to fire and to awe the soul of the worldliest among us, if he would but place himself in a position to experience it.

Soon the odor of bacon and coffee was cheering us to action, and the motor, at Bob's gentle suasion, gave a perfunctory cough and started duty. George and Daws got the anchor securely catted, when I clanged the starting-signal and spun over the steering-wheel. Daryl circled the harbor in a wide sweep and we were off, with the bright red sun rising over our stem.



WEST TURNAVIK ISLAND. CAPTAIN BARTLETT'S HOME IS SEEN AT LEFT.

Presently we swung north, and, for a couple of hours, threaded our devious way through a maze of islands and reefs of all sizes and shapes. An offshore wind had meantime sprung up, which blew down with great gusts through some of the funnel-like tickles, so that, for fear of getting a knockdown, which might lift the water circulation inlet out of water, we hastily stripped Daryl of all sail for the time being.

Diminutive harbors among clusters of bare rocks would open frequently to our view and disclose a small fleet of little schooners closely anchored, with the breakfast smoke blowing cheerily from the galley funnels.

"Rocks right ahead, hard a port!" sings out George Ford, who is on lookout. "Steady, now! Stop her! *STOP HER!*"

With a roar, the engine goes astern.

"All right, she'll go over; slow, now!" George is hanging over the stem, keenly estimating the distance to the green and white bottom, distinctly visible through the clear water under us.

"This is the shoalest spot! (as the water darkens) Let her go! I expect we should have took the easter' passage, but this 'un is quicker, anyhow."

So we pick our way along. Sometimes a strong flow of tide or a squall, which ruffles the water, complicates pilotage, but we merely pause. There is no turning back in this racket. Pick the deepest places from the look of the land. Keep near the "clifty" side of a tickle and give the shelving points a wide berth; have an eye for the bottom (you can see it in five fathoms) and let her go. We have a "cinch," compared with the schooners, anyhow.

Once north of Holton and clear of the islands, we set sail again and strike a merry pace. Byron Bay, with its "strand," opens invitingly to windward, but we may not linger. By noon, we have put Cape Harrison abeam, and the wind suddenly drops, when the day, now grown quite warm, becomes overcast. To the west, quite in the distance, tower some cloud-capped peaks. The whole appearance of the land is far more diversified and interesting than that south of Hamilton Inlet. But trees there are none; on the coast, at least.

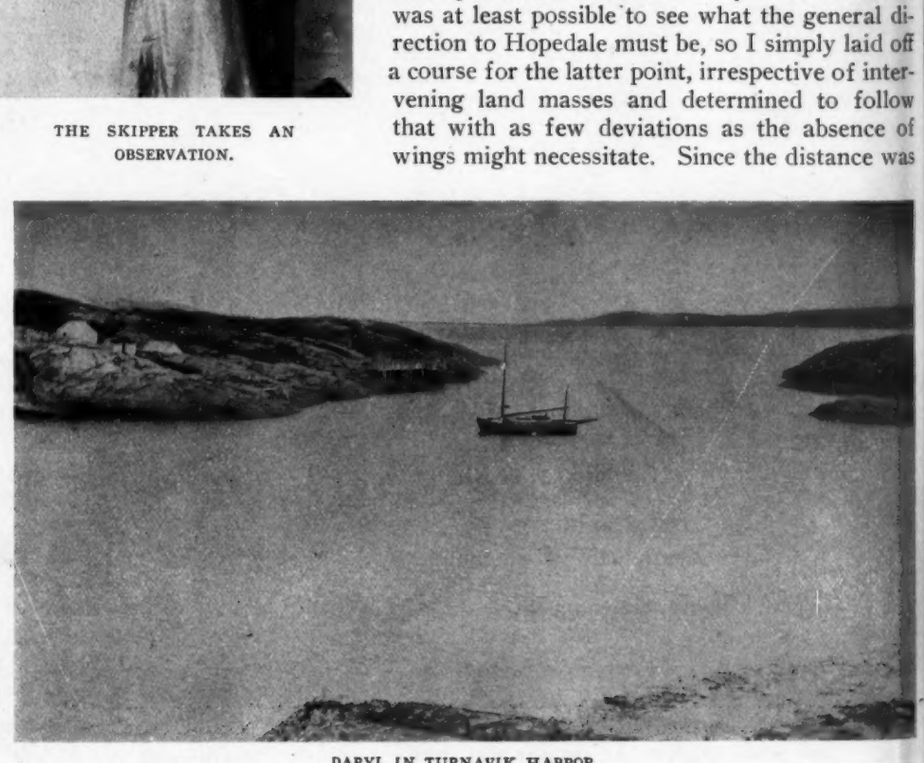
THE SKIPPER TAKES AN OBSERVATION.

"Cape Mokkovik by night," became the slogan on board, but, about 5 p.m., while off the Adlavik Islands, something happened to the lubricating system, and we bore up for a likely-looking cove while Bob shot "juice" through the oil-tubes with a squirt-gun.

Our new-found harbor was excellent from a seaman's point of view; a little gem, in fact, so I was bitterly wroth when, at sundown, we were invaded by streaming legions of the savage, sub-Arctic mosquito. For absolute ferocity of attack, they excel, I believe, any living insect.

By ten o'clock, all hands were frantic, and, as Bob had repaired the refractory oiler, we put to sea again in sheer desperation. It proved a saving of time, however, for morning saw us down off the Turnavik Islands, now famous as the place where Captain Bob Bartlett, of The Roosevelt, spent most of his youth on his father's fishing post. It was "coming on" nasty again by this time, with wind and rain from the east, so Daryl was hooked up in the pool-like little harbor (see photograph) of West Turnavik, and we all turned in for some real rest.

Four hours is sleep enough at one time for any man. Noon saw us under way once more, as the weather was not really poisonous. Before starting, George and I climbed to the summit of the island and tried to make the chart fair up with the islands actually in existence. It was at least possible to see what the general direction to Hopedale must be, so I simply laid off a course for the latter point, irrespective of intervening land masses and determined to follow that with as few deviations as the absence of wings might necessitate. Since the distance was



DARYL IN TURNAVIK HARBOR.

HUDSON'S BAY CO. POST ON DAVIS INLET.

FORD HARBOR, LABRADOR.

only 30 miles in a straight line, it seemed an easy run to accomplish before the late-coming darkness.

But we reckoned without the uncertainties of Labrador weather. Thus saith the official journal: "Pass the first bunch of islands O. K. and fall in with small Esquimo schooner bound for Hopedale. Refused to tow her, and regret it later. Go through last batch of islands and stand across bay (8 miles) for Hopedale in fog (fool stunt).

"Pick up some more islands (uncharted) but fail to come on the mainland beyond. Go about, and try to retrace course in hope of finding schooner, but fail, owing to strong current setting south, which lands us up in a cluster of islands of all sizes. See old shack on one and attempt to approach, nearly going aground. Steering-gear carries away at critical moment. Hastily patch it up and go on. Thick fog and darkness coming on. Wind E., fresh. Go around headland and find ourselves in narrow tickle, trending east and west. Anchor in little bay, at west end of it, in smooth water; have some food and turn in."

AN ICEBERG DRIFTING SOUTH OFF THE LABRADOR.

The wind howled and the rain poured that night, but, although it was impossible to see ten feet from the vessel, the smoothness of the water told us that so long, at least, as the wind remained in the same quarter, we need have no fear. George and I went over the chart and reconstructed the courses of the afternoon. I learned, then, how troublesome a little knowledge may be.

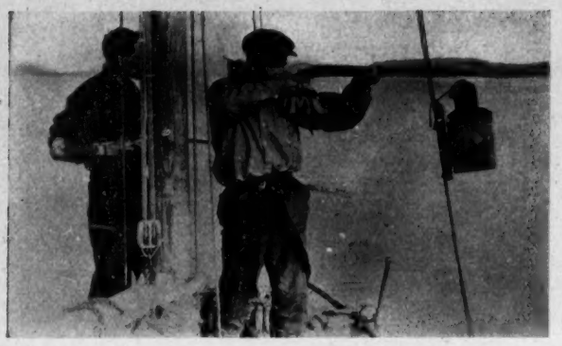
George was frankly unfamiliar with this section of the coast, but thought that he had recognized one of the islands passed shortly before coming to anchor, as one which lay several miles to the *north* of Hopedale. Being, myself, *totally* in ignorance of the entire coast beyond Indian Harbor, I felt in duty bound to give weight to his opinion, especially as the island in question had several distinguishing features; but, on the other hand, judging by the courses steered and the observed fact that the tide was setting strongly south, most of the afternoon, it seemed to me far more probable that we had been swept up into Deep Inlet to the south of Hopedale, marked in dotted lines on the chart. It became a necessity of deciding between a doubtful authority and a directly opposed, scientific hypothesis, and I ultimately chose the latter, as the basis for further exploration. This settled, we turned in.

Being somewhat tired, none of us awoke until after sunrise, the next morning. We found the fog being rapidly dissipated, and were amused to see that we had blundered into as fine a little landlocked harbor as could be found anywhere on earth. As the Chief put it: "This little tub sure is right there with the horseshoe!"

Getting under way after breakfast, we gingerly picked our way out of the tickle and, in accordance with the "Deep Inlet" idea, took a general north-westerly course through the rocky islands which lay all about in great profusion. A half-hour brought us out on a stretch of open water, and, on the other side of this, directly over our bow, George spotted a beacon set

ESQUIMO VILLAGE OF OKAK.

ESQUIMOS ON MISSION WHARF AT OKAK.



BOB AND DAWS SLAUGHTER THE ELUSIVE DUCK.

on the summit of a high hill. Some minutes later the red-roofed Moravian mission house of Hopedale was opened out from behind a point. This little experience taught me the valuable lesson to listen to advice, but follow one's own judgment.

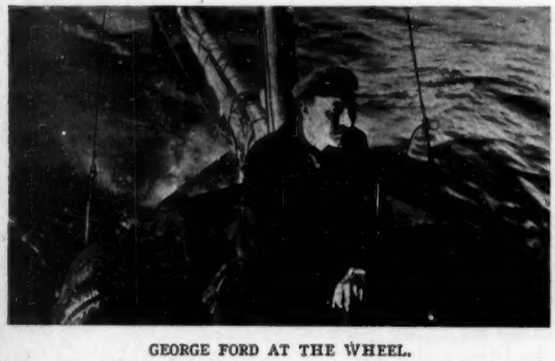
It being Sunday, all hands went ashore to the native service, which was conducted in a very orderly fashion and was a great credit to the missionaries, from an educational point of view, at least. The Esquimos, of whom there were only some twenty, just then, at the post, all came to service in their best "dickeys," and took their places in the clean little church with great solemnity. The entire service was in Esquimo, the natives joining heartily in the hymns, which they followed (or appeared to do so) from books printed in Roman characters.

Mr. Lenz, the missionary, and his good wife, received us with great kindness and hospitality, so that we would gladly have lingered a few days in this cheerful spot. The Northern summer is, at best, short, and we had a long voyage still ahead; so got away at about ten o'clock next morning to run to the Hudson's Bay Company post at Davis Inlet, some 40 miles farther on.

I should not forget to mention that, upon our arrival at Hopedale, we found the little schooner to which we had refused a tow, already anchored there. Her Esquimo skipper told us that he had got in about midnight (just when the night was at its worst) and quite justly jibed us for being so slow, when we had seemed in so great a hurry. The "huskies" are an extremely good-natured people, and seem incapable of bearing any malice.

Monday's run to Davis Inlet was remarkable only for another little adventure with the fog, which shut down just as we were nearing Cape Harrigan. Instead of passing clear of the Cape, as I intended, we blundered through Windy Tickle, which was really an advantage, as it saved a few miles. On the other side it was quite clear again, and about sunset, we anchored off the Hudson's Bay Company's post, having now traversed about half of the Labrador coast, but, as George carefully reminded me, the easier half.

We remained a week at Davis Inlet, a fact requiring some explanation. My understanding with the officers of the Hudson's Bay Company had been that the Daryl was to be delivered at Stupart's Bay, on the south side of Hudson's Straits, in about 71° 30′ W. Long., where the Company's supply-ship Pelican would call for us on her homeward bound voyage from the posts on Hudson's Bay. Since our cruise had commenced, however, we had repeatedly met with the rumor that we were bound for Cape Wolstenholme, at the extreme west end of Hudson's Straits. As this news came, on one occasion, from a factor of the Hudson's Bay Company, I thought it might be as well to learn what instructions in regard to picking us up had actually been issued to the commander of the Pelican, the easiest way of doing which would be to wait at the Davis Inlet post for the ship to call on her way north, since she was already overdue, and expected daily.



GEORGE FORD AT THE WHEEL.

It had been arranged, also, that the Pelican was to leave depots of fuel for us at one or two points on the coast, since the likelihood of the Moravian mission stations farther north being able to supply us in this respect was altogether a gamble. For this reason, as well, it seemed the part of wisdom to follow rather than precede the Pelican into the unknown.

Our time at Davis was by no means wasted, however. We re-stocked with supplies, and entirely changed the system of stowage, so as to give more room below, and at the same time put our ship in better trim to encounter the rough weather and offshore runs which we should have to face north of Cape Mugford. But most important was the Chief's work in tuning up the motor.

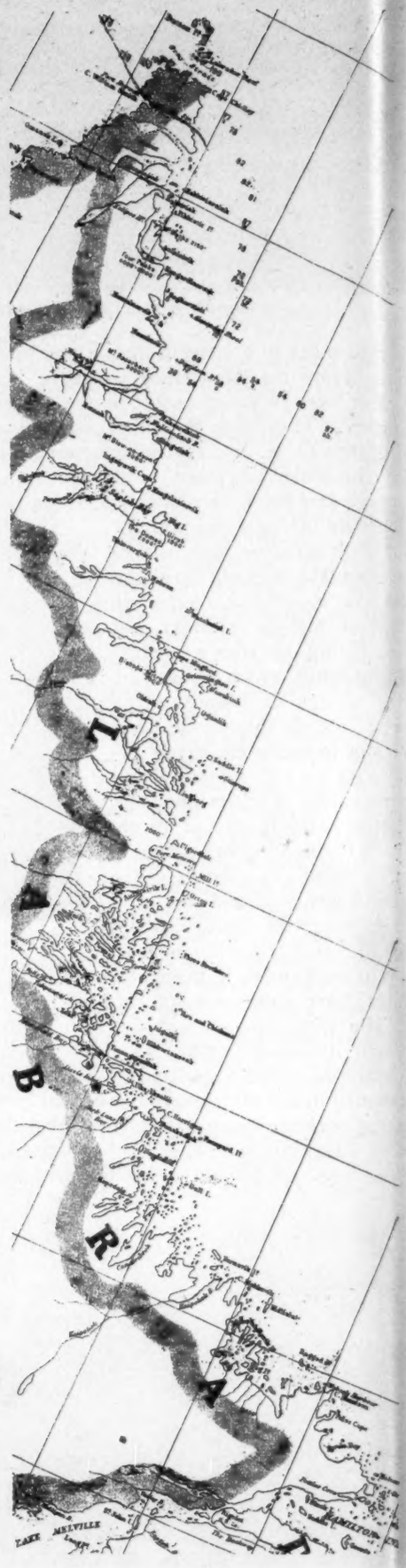
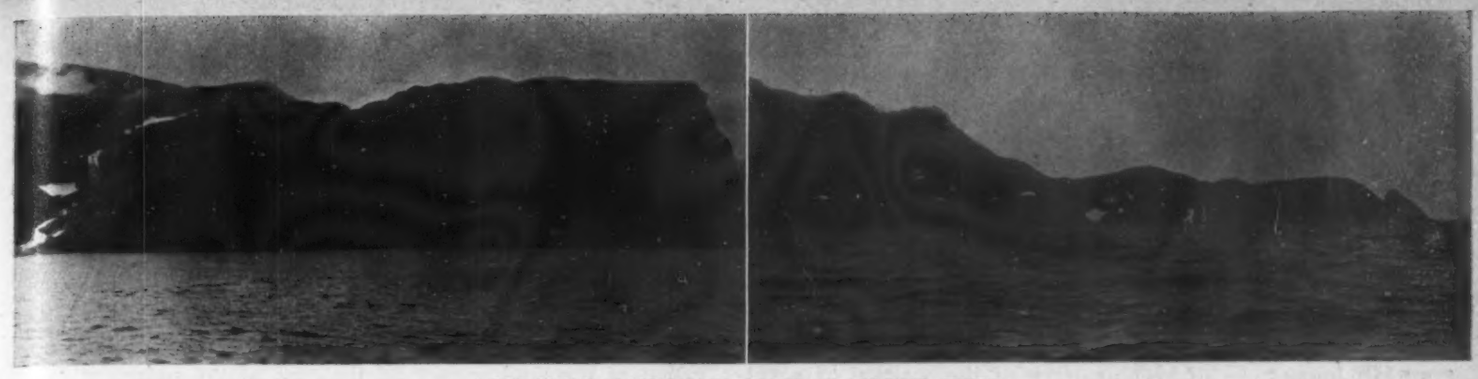


CHART OF THE LABRADOR TO THE NORTHEAST POINT AT CAPE CHIDLEY.



THE BLEAK COAST TO THE NORTH OF MUGFORD TICKLE.

After a good deal of experimenting, he succeeded in so timing and regulating the action of the pump which forces a jet of fuel into the cylinder on each revolution (ours was a *kerosene* engine, it will be remembered) that the efficiency of the motor was greatly increased, and its consumption somewhat reduced. For the rest of the voyage, running day after day on long stretches and under the most severe weather conditions, the engine never once failed us, or gave any difficulty worthy of mention—a tribute to makers and operator alike.

I had set a week as the longest time that we could afford to wait for the Pelican, fully expecting that she would appear much sooner, but when she failed to show up, we held a consultation and decided to push on. Accordingly, I left a letter for Capt. Smith, stating that I intended going to Stupart's Bay, and requesting him, if possible, to call at a station of the Moravian Mission, on the west side of Cape Chidley Island, the northeastern point of Labrador, and leave some oil for us there, if we had not already passed when he arrived there.

If one looks at the Admiralty Chart of Labrador, he will see in the vicinity of Davis Inlet, the bracketed remark: "Numerous islands all about." With a feeling, no doubt, of satisfaction in having sufficiently done his duty by making this announcement, the worthy chartographer proceeds to leave the paper a blank. But there can be no question that he told the truth. However, George Ford was right at home now, and for hours after leaving Davis Inlet he guided Daryl through a bewildering maze of rocky islands of all sizes and shapes; sometimes through narrow tickles, and again across broad sounds, from the centers of which the islands appeared to form a continuous circle of land all around us. The day was quite calm and warm and the water absolutely flat.

We were constantly raising flocks of the small Labrador duck and "tinkers," so that our progress must have sounded rather like a naval review had there been anyone within earshot of Daws' 12-gauge. Just as a caustic remark was being made about the futility of trying to sow a crop of bird-shot in the ocean, something broke water with a rush a little distance astern, and we turned to see a pair of giant sword-fish sweep past. Daryl at once started in pursuit, and now Winchesters began to crack. The great broad tails and a few feet of exposed back made a good target at the range. I was more or less anticipating a counter-attack as this beast (which is not the sword-fish of our waters at all, but the Arctic norwhal) has been known to dispute the freedom of the seas with large schooners, and has quite a reputation for ferocity; but they merely signalled down for full speed, and bade us good-bye in a manner suggestive of Mark Twain's sportive coyote.

At Ford Harbor, which we reached during the afternoon, we said good-bye to Daws, who had to get home by a certain date, this being the last point upon the coast at which he would be likely to connect with the semi-monthly mail steamer from the south. Abe Broomfield, a young native of the coast, had joined us at Davis Inlet, and now became "custodian of the meats and drinks" and picker-up-in-chief after Bob, whose habits of tidiness where anything to do with the engine was concerned presented an amazing contrast to his splendid disregard of the whereabouts of sundry articles of clothing, pipes, cartridges, toothbrushes and similar trifles.

Ford Harbor had been discovered and a fishing-post established there by George's grandfather. We gave him a run ashore to greet his relatives; and then pushed on north. The following day brought the good ship Daryl to the Moravian Mission post of Okak, inside of Cape Mugford, in 57° 45′ N. Lat. Our first question, on getting ashore, was: "Can you sell us some oil?" and great was our joy when Dr. Hetash answered "Yes."

We found the "huskies" here more numerous than at Hopedale, also more inquisitive, but the judicious use of some very un-missionary Anglo-Saxon cleared our decks when the pack became so thick as to interfere with the operation of filling tanks.

There was a drizzle of rain when we left Okak, next morning,

(To be continued on page 158)

THE COAST THROUGH THE FOG AND CLOUDS AS WE SAW IT.

A SUNSET ON THE LABRADOR.

Navigation by Bearings

THE VALUE OF TAKING BEARINGS ON FIXED OBJECTS TO DETERMINE THE EXACT POSITION OF THE VESSEL. SOME SIMPLE FORMULAE THAT ARE BUT LITTLE USED BY THE AMATEUR SKIPPER.

By C. S. STANWORTH,

Commander U. S. Navy, Retired

THE importance of keeping track of the position of a vessel by frequent plotting of cross-bearings on a chart cannot be overestimated by the person entrusted with the navigation. These positions carefully plotted show any set of current or leeway, and when taken frequently should give ample warning when the course should be changed to avoid shoals.

In the navy, when navigation marks are in sight, the navigator is constantly assuring himself of the position of his ship by cross-bearings, two bearings of the same object, single bearing and sounding, etc., all of which he records in his notebook, and then plots on the chart. If his vessel runs ashore, the Court of Inquiry will call for the chart on which the course of the vessel was plotted, and the navigator's notebook, and if these show that he has not taken advantage of every opportunity to verify his position, it will be more detrimental than an error in plotting. However, if bearings are taken frequently, an error in plotting or observing will probably be detected, as the position will not plot where expected. But, if you have not taken any bearings for some time, you do not know where they should plot, and hence you have no check.

The questions asked by the Board will be, "What navigation marks were in sight when the vessel grounded? How frequently were bearings taken? When was the last position determined and how?"

By navigation marks is meant not only lighthouses, buoys, etc., but any objects on the chart that can be identified, such as towers, points of land, islands, and above all, the marks on the leadline.

While yachtsmen are not subject to court-martial for running a vessel ashore, yet, if one is navigating a friend's yacht, the obligation is strong to give faithful, intelligent service. If, as owner, you are navigating your own vessel, besides the pleasure of knowing you are doing the work intelligently and well you should see that you are assuring the safety of your property. The question of insurance also comes in, for if a vessel is stranded on a well-charted coast in clear weather, the insurance company will very properly demand an inquiry into the methods of navigation in use, and neglect on the part of the navigator to take bearings may vitiate the insurance.

In navigating a boat in home waters, one soon becomes familiar with them, and by the relative position of objects and their apparent distance he *senses* his position. He has seen a lighthouse, say, in clear and hazy weather, and he instinctively allows for the condition of the atmosphere in judging his distance. He knows the set and drift of the currents, or his eye soon tells him. He is *piloting* his vessel, and does not need bearings.

He may have adventured once or twice outside of home waters, but he is unfamiliar with the size and appearance of lighthouses and the topography of the shore, and he feels a timidity that is only allayed when his course leads him close to a buoy that he can locate on the chart by its number.

To acquire the necessary confidence in your ability to guide a vessel over strange waters by a chart, let us assume that you know the errors of your compass on the different headings, and how to apply them to get the correct bearing of any object. Now, with the chart of your *home waters,* begin navigating by taking bearings, plotting them on the chart, laying off a compass course from that plotted position, and then steering that compass course, trying not to use your pilot knowledge unless necessary. When near a buoy or other charted object, take bearings, plot them, and see how close they will plot to your known position. If they do not plot close, it must be due to an error in observing or plotting, which you can remedy by more care. Or it may be due to using a wrong compass error. Take off from the chart the bearing of one of your objects, and compare the chart bearing with the observed bearing; the difference is the compass error

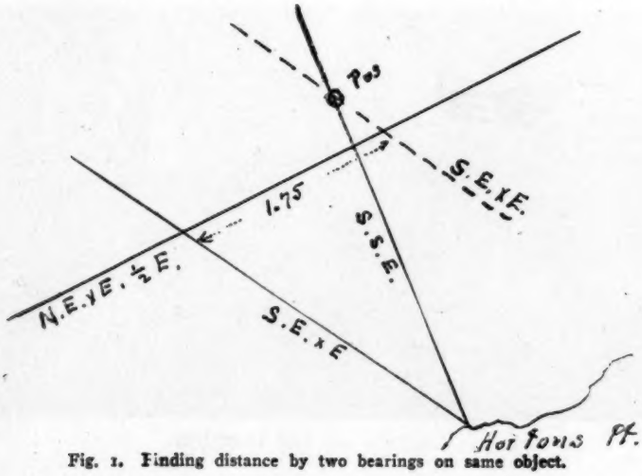


Fig. 1. Finding distance by two bearings on same object.

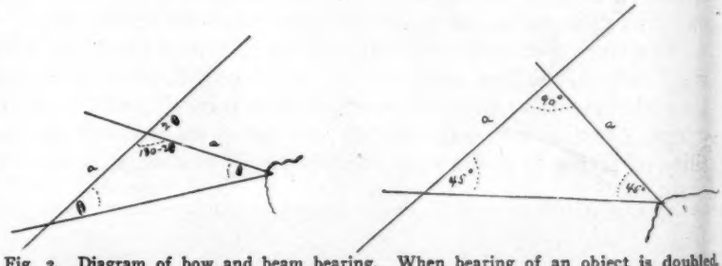


Fig. 2. Diagram of bow and beam bearing. When bearing of an object is doubled, its distance will be equal to that run by the vessel between the two bearings.

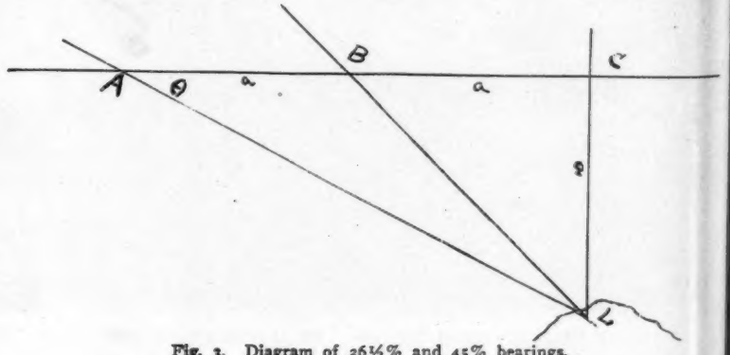


Fig. 3. Diagram of 26½% and 45% bearings.

for that heading. If you have used magnetic bearings, the difference is the deviation; if you have used true bearings, it is deviation plus variation.

When you find that your bearings are giving you good positions, then practice your pilot's eye. Having taken your bearings, mark on the chart where you think you are, then plot your position and compare the guess with the observed position. The object in this is to acquire the habit of piloting by chart, for in rainy or rough weather it may be inconvenient to plot your bearings, or in crooked channel work you may not have time. Keep a record of your bearings, however, and when occasion offers get a plotted position for verification. Having given yourself this training, you have learned to navigate or pilot by the chart, independent of local knowledge, and the only equipment necessary to enable you to extend your cruises are the charts.

HOW BEARINGS ARE TAKEN.

On large ships, the standard compass fitted with an azimuth circle is generally placed in an elevated position to remove it as far as possible from the iron of the ship, and this gives a view of the horizon. Bearings are taken directly with the azimuth circle by bringing the sight vanes in line with the object, and reading off the standard compass bearing, this bearing then being corrected for the deviation on that particular heading of the ship, giving the magnetic bearing.

In addition, provision is made for mounting a Pelorus at either end of the bridge, the Pelorus being a dumb compass card that can be clamped for any heading of the ship, and fitted with sight vanes. In using the Pelorus, the compass card is clamped at the same heading of the ship as that shown by the standard compass, and hence the bearings taken by the sight vanes on the Pelorus are the same as if taken with the standard compass.

On yachts the compass is often placed with no reference to the iron of the ship or with a view of the horizon. I was once asked to look at a compass on a new 75-foot yacht, as it was giving trouble. It was mounted on a low platform about two feet forward of the steering wheel, along the drum of which a steel tiller rope was continually shifting with the wheel, and while there was the usual amount of brass work aft, the compass platform had a galvanized iron railing and stanchions. On account of the tiller rope, you could not give a table of deviations. By substituting a bronze tiller rope and brass railing, the compass could have been made serviceable, but it was poorly placed for observing bearings.

When the compass is well-situated for taking bearings, it should be fitted with an azimuth circle or sight vanes, and bearings taken directly, thus avoiding any error in transposing bearings. If necessary to change course slightly to bring into view any object, change your course, allow the compass a couple of minutes to settle, take your bearings, and go back to the original course. You can now plot your bearings, using of course the compass error for the heading the ship was on when the bearings were taken.

If the compass is poorly placed, draw a circle on top of your cabin, mark off the fore and aft line, and divide the starboard and port semi-circles into 16 parts each, and mark the 32 points of the circle with short and long lines as a compass card is marked. Put a bushing in the center of the circle, and fit a wooden or metal arm with vertical pins at the ends to revolve in this bushing. You now have a dumb compass with sight vane. Take your bearings, recording them as so many points on starboard bow or quarter, port bow or quarter, also the heading by compass. A simple calculation will give the compass bearing of the object.

For instance, Horton's Point bore 7 points on starboard bow, and Cornfield Lightvessel bore 3 points on port bow, course E by S. Then, Horton's Point bore S., Cornfield bore E.N.E.

Table for finding the distance of an object by two bearings, and the distance run between them.

Points.		Difference between the course and the first bearing—points.																
		2	2½	3	3½	4	4½	5	5½	6	6½	7	7½	8	8½	9	9½	10	10½
Difference between the course and the second bearing.	4	1.00																	
	4½	0.81	1.23																
	5	0.69	1.00	1.45															
	5½	0.60	0.85	1.17	1.66														
	6	0.54	0.74	1.00	1.35	1.85													
	6½	0.49	0.67	0.88	1.14	1.50	2.02												
	7	0.46	0.61	0.79	1.00	1.27	1.64	2.17											
	7½	0.43	0.57	0.72	0.90	1.11	1.39	1.77	2.30										
	8	0.41	0.53	0.67	0.82	1.00	1.22	1.50	1.87	2.41									
	8½	0.40	0.51	0.63	0.76	0.92	1.09	1.31	1.58	1.96	2.50								
	9	0.39	0.49	0.60	0.72	0.85	1.00	1.18	1.39	1.66	2.03	2.56							
	9½	0.38	0.48	0.58	0.69	0.80	0.93	1.08	1.25	1.46	1.72	2.08	2.60						
	10	0.38	0.47	0.57	0.66	0.76	0.88	1.00	1.14	1.31	1.51	1.76	2.11	2.61					
	10½	0.38	0.47	0.56	0.65	0.74	0.84	0.94	1.06	1.19	1.35	1.55	1.79	2.12	2.60				
	11	0.39	0.47	0.56	0.64	0.72	0.81	0.90	1.00	1.11	1.24	1.39	1.57	1.80	2.11	2.56			
	11½	0.40	0.48	0.56	0.63	0.71	0.79	0.87	0.95	1.05	1.15	1.27	1.41	1.58	1.79	2.06	2.50		
	12	0.41	0.49	0.57	0.64	0.71	0.78	0.85	0.92	1.00	1.08	1.18	1.29	1.41	1.57	1.76	2.03	2.41	
	12½	0.43	0.51	0.58	0.65	0.71	0.77	0.83	0.90	0.97	1.03	1.11	1.20	1.29	1.41	1.55	1.72	1.96	2.30

NOTE.—Table 5A in the American Practical Navigator (H. O. Publication No. 9) gives the same to quarter points.

RULE.—Multiply the distance run in the interval between the two bearings by the number found in the table under the difference between the course and first bearing, and opposite the difference between the course and the second bearing. The product is the distance at the time the second bearing was taken.

EXAMPLE.—A lighthouse, when first seen, bore WNW.; after running W. by S. 16 miles, it bore N. ¼ W. Required, its distance when the second bearing was taken.

Difference between course and first bearing..... = 3 points.
Difference between course and second bearing..... = 8½ points.
Corresponding tabular number..... = 0.63.
And 16 miles × 0.63 = 10.08 miles, the distance required.

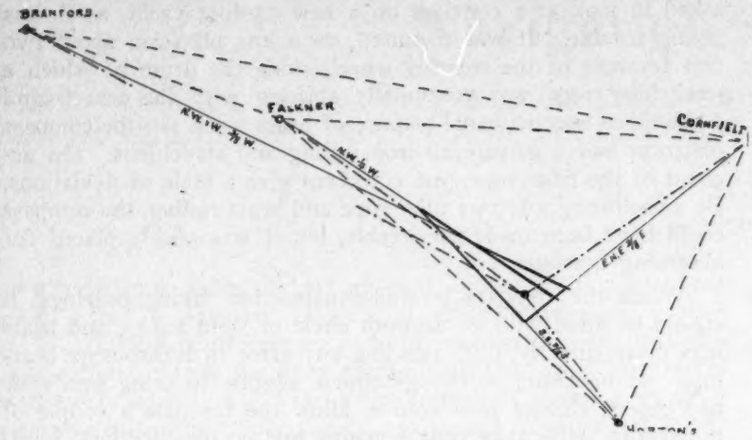


Fig. 4. Plotting position for a four point bearing with an unknown compass error. Dot and dash lines correct bearings; full lines observed bearings.

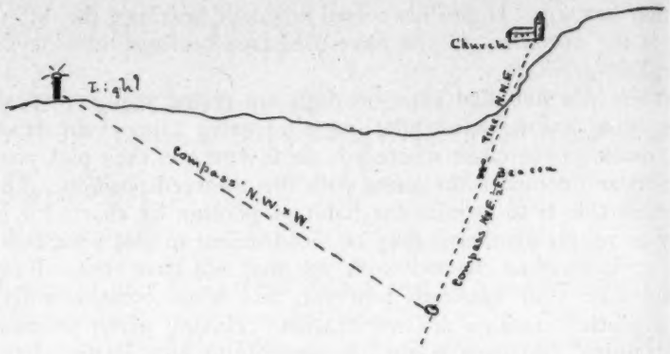


Fig. 5. Taking a range bearing to correct compass error.

True bearing of church from beacon	N.N.E.
Observed bearing by compass	N.xE.½E.
Compass error	½ pt. E'ly.
Observed bearing of light by compass	N.W.xW.
True bearing of light	N.W.½W.

Bearings can be taken with some accuracy by lining your hand across the compass, and it is an excellent practice to obtain the approximate bearing in this way before using your dumb compass, for you not only test the accuracy of lining up, but you avoid any serious error in transposing your dumb compass bearing, since you know about what it should be.

CROSS-BEARINGS OF TWO OBJECTS.

The simplest method of establishing the position of a vessel on a chart is to observe the compass bearing of two charted objects, correct these compass bearings by applying the total compass error for that heading of the ship, and with the aid of a protractor and the nearest meridian line, draw lines through the observed objects at the angles of the true bearings. Or you may use the parallel rulers and the nearest compass rose, being careful to use the *true* compass rose if you have corrected the compass bearings for deviation and variation, the *magnetic* compass rose if you have corrected only for deviation. The intersection of these two lines on the chart will give you the position, and the nearer the intersection is to a right angle the better.

Since lighthouses are the principal navigation marks, both by day and night, you can enhance the value of your charts by having a rubber stamp of a compass rose made, and imprinting a compass rose with center at each lighthouse, being careful to have the North-South line of the compass rose coincident with the meridian line if you wish to use true bearings, or with magnetic N. if you wish to use magnetic bearings. Now when you take a bearing of a lighthouse, after correcting it, lay your ruler along the compass rose at the lighthouse, and you have no shifting of ruler to do.

TWO BEARINGS OF THE SAME OBJECT.

Very often, especially along the coast, we have only one object in sight which we can identify on the chart. Now, if we take a bearing of this object, observe carefully our course and distance run, and after changing the bearing 3 or more points, we again take it, we can determine our position, for we have a triangle in which the distance run is the base, and the angles at the base are determined by the difference between our course and the two lines of bearings. We can use the subjoined table, and with the data there given, pick out the distance of the object at the second bearing, which gives our position.

It will be more convenient and certainly more gratifying to the eye, to work out this triangle graphically on the chart with the aid of the parallel rulers and compass rose.

Take your first bearing, correct it, and draw it on the chart, marking your probable position on it. Through this position draw a line representing your course. After running a certain distance, the bearing has changed 3 or more points. Take the second bearing, correct it, and draw on the chart, also mark off on your course the distance run. If the distance run coincides with the intersection of the second line of bearing and the line representing the course, this is your position. In all probability it will not, so with your parallel rulers draw a line through the point representing the distance run, and parallel to the first bearing. Where this line intersects, the second line of bearing will be your position, provided your distance run represents the distance over the bottom, or in other words you have had no current, for I presume that you have the means, patent or chip log or engine revolutions, to determine your speed through the water.

As an example, suppose you are running to the eastward in Long Island Sound, hugging the south shore on account of flood tide and a strong easterly wind, and have sighted Horton's Point on your starboard bow when it shuts in thick. Your course is N.E. by E. ½ E., speed 7 knots, and presently you sight Horton's Point bearing S.E by E. (magnetic), which you put on your chart, where you already have your course line drawn. Fifteen minutes later, Horton's Point bears S.S.E., and laying off 1.75 knots along your course from the point of intersection of the first line of bearing, you draw through this a S.E. by E. line, and also through Horton's Point a S.S.E. line (the second bearing). Where these two lines intersect is your position. (See Fig. 1.)

Or, having the following data: distance run 1.75 knots, course N.E. by E. ½ E., first bearing S.E. by E., second bearing S.S.E., you can use the table, and at 5½ points vertical column, 8½ points horizontal column, we find the unit distance 1.58, which multiplied by 1.75 sea miles, our distance run, gives 2.7; or at time of second bearing Horton's Point bore S.S.E., distance 2.7 sea miles. (See rule given with table.)

IMPORTANCE OF SOUNDINGS.

It is an excellent practice to take a sounding whenever you take bearings, for if you have gotten good cross-bearings, the sounding gives a check. In the case of bearings on a single object, soundings should be taken at each bearing, for from it you may often determine whether you have a current or not.

Suppose when Horton's Point bore S.E. by E. you sounded and had 11 fathoms—you would have a fairly good position at once. At the second bearing you find 9 fathoms which agrees with the chart at the intersection of the lines of bearings. You will notice on your chart that if you continue on your course for 15 minutes you will pass over a 5-fathom bank; so if it shuts in thick again, you will by sounding be able to check your position. If your sounding when Horton's Point bore S.S.E. had been less than 9 fathoms, it would have shown you that

you had allowed too much for distance run, or in other words had a current against you, and for your bearing to have shifted 3 points in less than 1.75 miles you must be closer to Horton's Point than 2.7 miles.

DOUBLING THE BOW ANGLE.

If we take our first bearing when the object is, say, 3 points on the bow, and wait until this angle is doubled, or the object is 6 points on the bow, the triangle formed by the two lines of bearing and the course line will be an isosceles triangle, and the distance run will be equal to the distance the object is at the second bearing. If the object was "on the bow," *i. e.* four points or 45° off our course, the double angle will be 8 points or 90°, and the distance run will be the distance of the object when abeam. (See Fig. 2.) This "bow and beam" bearing should always be taken when passing lighthouses, and an entry made in log or notebook, "At——passed——Lighthouse bearing ——,distance——miles, course——."

On account of an off-lying shoal, you may wish to know beforehand at what distance your course will take you clear of a point of land or lighthouse. In this case, note your patent log when the object bears 26½ degrees on the bow, and again when it bears 4 points or 45 degrees on the bow. The distance run will be the distance off when the object is abeam. 26½ degrees is nearly 2¼ points. (See Fig. 3.) We construct the 45° triangle first, and lay off BA equal to BC equal to CL; then by construction, tangent angle CAL is equal to $\frac{CL}{AC}$ or ½ or .5. Angle CAL equal to 26° 34′.

POSITION BY BEARING OF THREE OBJECTS.

Obviously, if we know the error of our compass and apply it correctly, lines of bearings from any number of objects will intersect in the same point (the change of position of the vessel while bearings are being taken being negligible). Consequently, when we establish our position by cross-bearings, if we take the bearing of a third object, we have a reliable check on our work. We will rarely find that the three bearings meet in a common point, but instead their intersection will form a triangle, the size of which will be directly proportional to the error of our work. However, we can by inspection of this triangle, estimate closely our position.

Suppose we are at such a position in Long Island Sound that Horton's Point bears S.E. by S. ⅛ S., or S.S.E. ⅞E. Falkner Island Light bears N.W., Westerly, Cornfield Lightvessel bears E.N.E. ⅝ E. Branford Reef Light bears N.W. by W. ⅜ W.

If we draw these lines on the chart, we will find that they meet in a common point as shown in the sketch (Fig. 4) by dot and dash lines.

Now, suppose our compass had an unknown compass error of one-quarter point easterly deviation on that heading.

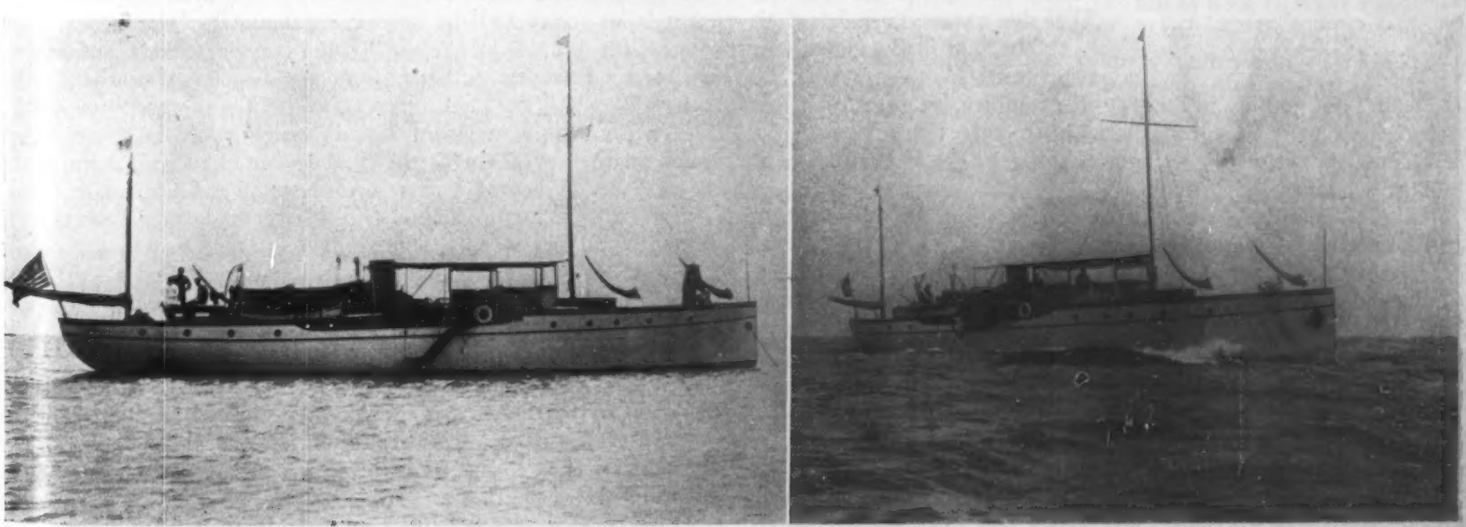
This would make our bearings become Horton's Point, S.E. ⅞ S., Falkner Island, N.W. ¼ W., Westerly, Cornfield, E.N.E. ⅜ E.; Branford, N.W. by W ⅝ W. which lines are drawn in full on the sketch. Now consider the triangle formed by the first three lines, in which our true point lies inside of the main triangle formed by connecting Horton's, Falkner, and Cornfield. Here we find that our true point lies *inside* the small triangle formed by the intersection of the three lines of bearings.

If we consider Branford, Falkner and Cornfield, where our true point lies outside of the main triangle, we find it lies *outside* of the small triangle formed by the intersection of the three lines of bearing, and *what is important*, it is on the same side of the line of bearing from the most distant object (in this case Branford) as the intersection of the other two lines of bearings (from Falkner and Cornfield).

Knowing these two laws and having drawn our lines of bearings from three objects, we can estimate quite closely our true position. Or, we can take a sheet of tracing paper, and lay off from a common point, using a protractor or the compass rose on the chart, our three lines of bearing, marking each line with the name of its object. Place the tracing paper on the chart and move it until the lines pass through their respective objects, then prick through the center, which is your position. From the chart, take the bearing of this point and any of your observed objects, preferably the more distant. The difference between the bearing taken from the chart and the bearing you observed, will give you your compass error.

RANGES.

If our vessel crosses the prolongation of a line joining any two charted objects, these objects are *seen* to come in line, or *on range*. This range is a fixed line of bearing and can be drawn on the chart beforehand. Now, if at the moment of crossing the range, a bearing of another object is taken, we have a very accurate position, for one line of bearing is exact, and errors can only affect the other line. Moreover, by taking our compass bearing of the more distant object in range and comparing it with the bearing on the range taken from the chart, we can at once determine our compass error and apply it to the second bearing. We take the bearing of the more distant object on range as it is changing less rapidly. Fig 5 shows this clearly.



GAVIOTA, THE ABLE 73-FOOT POWER CRUISER BUILT LAST SPRING FOR W. H. BRIGGS FROM DESIGNS BY MORGAN BARNEY.

BALD DUTCH AND THE SILLY FISH

BY MARCUS CONLAN

ILLUSTRATIONS BY J. M. ROSÉ

HOW A NEW HAND ON A SWORD FISHERMAN "CAME BACK," TO THE SURPRISE OF THE SKIPPER AND CREW, AND PROVED HIS FITNESS FOR THE JOB.

CAP'N ZEKE spun the wheel a few spokes to leeward just for the fun of giving Galway a wider lurch in his mast-head lookout. He grinned tolerantly when the Dutchman came out of the shack-closet.

"He's hefty and hard-lookin', but I swanny, I never seen a bald-headed, deep-sea fisherman before," he confided to Lem. Dutch, thin of thatch, broad and deep of chest, was munching an apple, gazing with serious, intent interest at the cavity left by each bite.

"Seen him go aloft in a pair o' them loose brogans to shake out the kink in that toppin' lift," mused Lem. "One of the slippers slid off'n his hoof. Must 've weighed four pound. Most went through them dories. Then he comes down barefoot as to that hoof, like shoes was superflewgus."

"LIFTED THE SHAFT AS HIGH AS HIS ARM COULD REACH."

"I ain't got nothing in the way of prejudice against a man just because he's bald as a coot, but Dutch sure don't look like a fisherman," persisted the skipper, leaning to the heaving rise of the little schooner.

"There's many a bald-head has enough hair on his chest to stuff a mattress," suggested Lem.

"Nature's sillier than sword-fish, it seems," said Cap'n Zeke.

The air was leaden with a humidity that forced the gurry from the seams of the freshly swabbed deck. Dutch's rubber boots oozed along the planking with the sucking noise of squilgees as he balanced his way forward. Little beaded gurry puddles marked his tread by forecastle and anchor bitts to where he leaned against the weather bow. There was hardly breeze enough to keep the mainsail outboard. Gaff and boom rolled lazily toward the rail when the schooner righted from each slow lurch. An oily swell striking under the counter sent her forward with a swishing sound that came less from headway than from the sucking of the swell against her sides.

Stripped to belt and trousers, bare feet in heelless scuffs, the cook stepped out of the inferno of the galley, shuffled to the rail and flipped a bucket over the side. Its quick "chuck" as it filled, a short, two-handed pull on the line as it came back over the rail, its inversion and the splash of its cold, green contents over the head and shoulders of the sweating figure took but a moment.

"Cooks is long on brains," said Cap'n Zeke, enviously. "I nearly thought of that myself."

Lem relieved him at the wheel and Galway, in his swaying perch, transferred his gaze from helmsman to sea, in the wearisome search for a "finning" fish. The skipper sat on the after house and damned the heat. Fanning the deck came a puff of air, hot and moist as a steam exhaust, but without force enough to crinkle the hard, polished surface of the swell. Reeking smells of guts and gurry stewed out of every plank. Sweat bubbled on foreheads and trickled down the cheeks of the men up forward getting out shafts and lily irons and straightening the mess of line-tubs and barrel-floats. Lily irons were as hot to the touch as if the cook has used them for stirring his fire.

"Me for the pulpit; you kin have the wheel," said the skipper, "always supposin' there's any fish. If I can plump an iron into a big feller today he'll be broiled automatic for six inches deep where I hit him. I just felt a lily and it most took the skin off'n my hand. I don't calk'late there's any fish lying on top today, though."

"If you was a mermaid I don't guess you'd be fryin' your scales on the surface with the mercury at 103," said Lem, with the easy democracy of a share-and-share sword-fisherman.

"No; this is just a yachtin' trip. Better have your bath before dinner," said the skipper, scornfully.

Over heavy shoulders and tousled head he pulled a shirt that stuck clammily to chest and back and tossed a bucket into the concaving wake that chased the schooner. Dipping hand and wrist into the water he drew up, he gave a disgusted snort.

"Warm as soup," he growled and flung the contents full at the chest of the helmsman. The latter grinned his appreciation.

"Git Dutch to sit on the rail and fan me, and fix an awning over this sizzlin' corner of hell and I'll git your point about the yachtin'," suggested Lem.

The skipper scooped three or four buckets before the tem-

perature of the water suited him. Then shedding his scale-caked overalls he stood, six feet four inches of corded-muscle, and doused his frame again and again in the shade of the mainsail.

From Galway, lurched six feet out to leeward on the foremast head, came a drawling call.

"Settin' in thick to win'ard, sor."

"You ain't no gov'mint weather station; you're supposed to be a studyin' dorsal fins," yelled the skipper, and wiped the sweat of this new exertion from his brow.

"Divil a fin is there to study; I ain't seen a flicker," came the response from the figure cutting monotonous parabolas against the sky with the heave and slide of the schooner.

"Come down, then," called Cap'n Zeke. "We ain't lookin' for fish. We're just horn-swiggled yachtsmen and the smell of fish might sicken us. I'm goin' to sleep below on ice and salt if we don't git wind tonight."

Far over to the eastward and curving around to a point astern, a low-lying, slate-colored bank of cloud flickered into incandescence with the pulsations of lightning. Off the starboard bow, the sun, relentless to the last, was spilling the ocean full of molten brass that slid like living heat over the lazy swell. A flaming haze marked the plunge of the disk into the sea. It mounted like flames leaping into forest foliage until it scorched a flake of cloud over the swaying trucks. The swell lowered and lengthened and the lightning came in dual strokes, alternating with blackness that shut out the world. Slowly mounting, the slate colored cloud-bank measured the span between sealine and windward lurch of top-hamper.

"Dutch, you git up a spell. Swordfish is selling for 15 cents a pound. Yell in your best tenor voice if you see anything finnin'. There's half an hour of good light. Don't disturb these dudes for sharks or porpoise, if you know the difference."

"Portugee Joe told me a funny one about a porpoise once," began Lem.

"Yep; first time I heard that story of Joe's I bit my rattle," said the skipper dispassionately. Lem subsided.

"Luff her, Luff her!" came the yell from Dutch, now leaning forward from his perch, one hand clutching a stay, the other shading his eyes. "Off the port bow. Easy, easy, steady now."

With a shuffling run the skipper made the bowsprit and worked his way out by jib to the pulpit. Chest against the iron guard he peered into the crimson-splashed sea. Close into the wind the schooner had crept and with lessened headway was running down silently toward a speck that broke the waste of painted sea.

"Keep her as she is," came from Dutch and skipper. With a quick pull Cap'n Zeke had freed the long harpoon shaft from its lashing across the pulpit. A glance at lily-iron and line and he was ready. His figure made a great, black blotch against the sea and sky as the dip of the bowsprit brought him close to the waves and the rise shot him high against the horizon. Inboard, close to the forestay, stood Galway and the cook ready to see that the line ran free from its tub and to hurl the float.

Upstanding like a Viking, his back lumped into muscles behind the shoulder blades, Cap'n Zeke lifted his shaft as high as his arm could reach and poised for the thrust. The motionless fin, marking the back of the sleeping monster, was just ahead as the skipper filled his lungs and tightened every fibre.

A vicious downward stab as the swell heaved up toward his platform, and the iron had entered the fish; a lightning-like backward jerk, and the shaft pulled clear, its barb imbedded transversely by the drag on the toggle. Over went tub-float and line with a toss that was simulanteous with the backward pull of the skipper's shaft. With a swishing rush the fish plunged for the bottom, the line sawing and gashing the blood-stained water. Dutch lurched down from the mast-head, eager for dory work. Galway, of the keen blue eyes, replaced him as lookout.

The lethargy of the heat was forgotten and the schooner was alive with the zest of the hunt. Dutch slapped his dory like a toboggan onto the crest of the swell as it rose almost to the height of the rail and spilled himself into it headlong. Before he could ship his oars the schooner had swung off with the wind and with three men aloft and canvas full was jogging toward another fin that cleaved through the sag of the sea.

"THE DORY RODE HEAD INTO THE WIND AND SEA."

A dozen strokes across the thickening darkness brought Dutch alongside the float, bobbing across the rising chop, and he swung it aboard. Kneeling to the dizzy pitch he hauled in on the line. A dozen fathoms came easily. Then came a tug that burned his calloused palm and the line ran through his hands like a white-hot wire as the crazed sword-fish plunged again. Dutch had barely time to jam the float under the forward thwart and brace it with his knee. Drawn by the blinded rush of the 400-pound fighter, the dory topped the teeth of the chop in a fifty-foot run that splashed the spume into Dutch's face. He grinned with the joy of the fight and sprawled himself with rubber boots wide against the sloping sides for steadiness. The line fell slack and again he hauled.

A cutting spatter of hail followed a tumbling, pounding clatter of thunder, and the green loom of the lightning showed him the fish's skull and four-foot sword a dozen feet away. With a rush that fouled the dorsal fin in the floating slack of the line the fish swept half-way by in the dark, then turned with a convulsive twist and plunged his dull bone snout through the bottom and starboard side of the dory.

Dutch had leaped to a thwart before the stern of his craft was lifted by the splintering impact. Before he could clutch maul-

stick or gaff, the fish with a titanic twirl had snapped itself free, leaving the sword imbedded in the starboard planking, and gallons of water bubbled through the hole in the bottom.

The line lay idle over the side and the harpooned monster, after a terrific threshing, rolled alongside, belly up, dead. Dutch clamped a massive foot over the gashed flooring. His shirt was torn off in a flash, rolled into a ball, welded into the hole and tamped tight with the butt of an oar. Canting his dory until the side was almost awash he was reaching out to ship the fish when the screaming of the gale was on him.

White froth sliced from the tumbling chop flicked by with the sting of a whip-lash. The dory reeled in the trough. A curling green sea tossed it broadside a dozen feet, seeped it down, and spurned it off again. In momentary danger of swamping, with no sea-anchor to head him into the wind, Dutch lost his grin. His eye fell on the wallowing bulk and gleaming white belly awash in the surge to windward and the slackened line from the imbedded lily-iron.

Clutching the slippery sides he worked his way to the forward thwart and passed the line quickly under, over and under the thwart again. The broadside lift and throw of the next comber tautened the line, slid it to the bow and flicked the stern away. Crouching low, he bailed hard and the dory rode head into wind and sea, dragging on its improvised sea-anchor. He grinned again, a mixture of hope and defiance lighting the high-boned cheeks.

A sparkle of gold light through the hot darkness far back over the starboard quarter marked South Shoal Light, pricking its signal into a murk that blended sea and sky. Twice had the dip of the bowsprit sunk the skipper to his ankles in the crest of the mounting turmoil. The lee rail was cutting a crescent line in the sea that whipped by like a mill-race; canvas bellied until sheets were as stiff as bars of iron.

Obstinacy, fed by three days of wasted heat and calm, kept the skipper in his plunging pulpit. He leaned forward intent, his muscles like coiled springs. Lem saw what was coming and tried to meet it. His wheel came up hard but he was too late. Nose into a tumbling mountain went the schooner. Deep dipped the bowsprit and its hulking figure and a wave that washed clean over the bow hid the skipper and his little braced platform.

With the upward lunge he emerged like a sea-king, a long dripping lock of hair down his forehead, eyes blinded with salt, limbs bruised from the crushing, but still in his throne. Lines and tubs swept aft and were settling to rest in the pools by the choked scuppers.

"To hell with fish! Git that Dutchman!" yelled Cap'n Zeke, making his way inboard. Slowly the schooner luffed and then began the hard beat back, tack and tack under shortened sail, a short run on the dying lash of the blow, another beat to windward and a constant search with the aid of the lightning. All hands but the helmsman, stood, wide-legged, lining the windward rail amidships, with eyes straining into the blackness ahead.

The last ragged flecks of cloud had been ripped from the sky and flung into the obscurity toward which the schooner lunged. Hardly had the segment of a moon lurched dizzily through the torn fragments of its curtain than the cold feel and smell of fog hit the hot faces of the men and sifted through the wet shrouds. All eyes turned to the quarter whence South Shoal had been sending its 12-second gleam after each three seconds of blackness. Thick vapor that hid the tossing seas two schooner's lengths away had blotted the glare of the triple-lamps and was already rising above the topmasts and screening the moon.

"I was readin' once in a magazine about the doctrin' of the survival of the fittenest," ventured Lem, between the mournful blasts of Galway's fog-horn. His eyes ached with the futile peering into nothingness.

"If you're meaning that Dutch warn't fitten to be a sword fisherman, there's another saying about keeping your yap closed at certain times," snapped the skipper.

"Oh, sure, I started all this gag about his shiny knob, didn't I?" said Lem, with infinite scorn as he swayed away in his dripping oilskins.

"Lem!" yelled the skipper with rising fury, "If 'twarn't that you're a cousin to my wife, this survival of the fittenest business would make you a bait fisherman in the Ginney motor-dory fleet."

"Oh, aisy now, aisy now, the lad means no harrum," said Galway. "Fit or not, the Dutchman's finish is that of a fisherman. Manny as good a fisherman as ever come out of Galway or Inishmore, or Chaddagh or Tay wharf or Gloucester, ended his days the same way."

So thick and dank that its weight could be felt like a compress on the lungs, the fog mantle shrouded the schooner. Looking ahead the men could see the hurtling crests only when they licked up to the bowsprit pulpit. Aft from the bow the vision blurred into unreality when it sought to pass the foremast and the dory-nests. Objects 20 feet away were out of one's world. Relief could not reach its eager hand into the baffling curtain.

It was hours after wan daylight that the fog burned off the lowering swell. The men aloft, with reddened, salt-stung eyes scanned seas that were turning from lead to blue without a sight of the missing dory and its occupant. Gleaming sun and an easterly breeze with a cool, salty tang like the smell of seaweed called the men to their tasks again. Galway wondered audibly, "Had he kith or kin, I dunno." No one answered and he climbed to the lookout slowly. Cap'n Zeke edged his way out to the pulpit, Lem brooded silently over his wheel, the cook pared potatoes outside the galley. Three or four of the men spilled out the tubs of line, freed the floats and studied the sea.

Ten days later the schooner worked her way slowly across Massachusetts Bay, picked up a tow and was scurried along the painted crimson of an early tide into the upper harbor. Outbound ocean tugs with coal barges, fishermen bound for the Georges and Grand Banks, and an early moving hooker returning light to a Nova Scotian port, saw the half-masted colors.

On a cap-log on T wharf's southeast corner sat a giant, bald-headed figure, who grinned between puffs at a corn-cob pipe. Fish dealers from the wharf houses and fishermen from the clustered schooners stood with him. With a jangling of engine room bells the tug restrained the headway of the schooner and swung her bow in for the basin. Cap'n Zeke stood forward, clutching the forestay and ready for his shouted dicker with the buyers on the wharf. Galway shouted first. "For the love of hiven, there's Dutch." There was a scramble of rubber-booted men from aft.

"Baldy, Baldy, Baldy," yelled Galway, "you ould billiard ball; how did you do it? Faith, you must be Irish on your mother's side at laste."

Bald Dutch responded with a wide grin to the dazed but happy smiles of a rail-full of shipmates. He held his peace, however, until Cap'n Zeke swung across a couple of intervening decks.

"Dutch, gol dern yer; where's your fish?" said the skipper, gulping back a sentimental flood that threatened to overcome all professional restraint.

"Portugee Joe got him all right. Goes on our catch. That's damn good sea-anchor,—sword fish. Joe picks me up next day on the Manuel Silva. Fish weighed 400."

"Ain't he intimate on details," said Lem, over the skipper's shoulder.

"He's fitten for fishin; all right!" said Cap'n Zeke.

THE CLUBS ALONG THE GREAT SOUTH BAY WATERWAYS FURNISH KEEN MOTOR BOAT RACING.

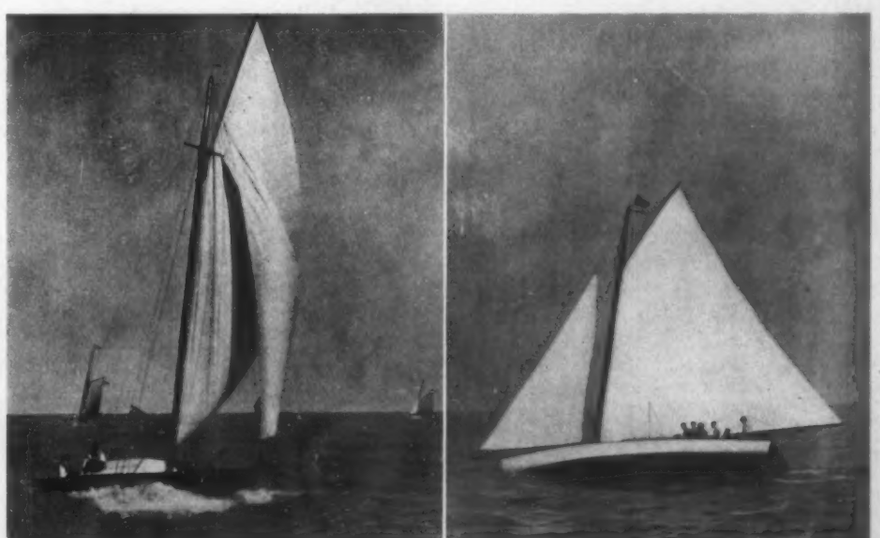
The Month in Yachting

AT the close of the active racing season just passed it seemed probable that Dixie IV, which had proved herself the fastest and most consistent motor boat in the world, would represent America at the world's greatest motor boat meet at Monaco in April. There was much talk to this effect; but unfortunately talk does not produce results and it seems now unlikely that Dixie IV will be sent across the water, and furthermore, that no American built boat will be found there. This is unfortunate, as it would undoubtedly be a stimulus to the sport and insure keener racing over that famous course if an American boat was present as a contender. There are plenty of men in this country who could afford to go there, were they so inclined, but, unfortunately, there are not many boats that can show the class necessary for the open events and the Grand Prix of the Mediterranean. Such craft do not grow on every tree. No other American boat than Dixie IV has so far demonstrated in public her ability to stand a chance against the big Ursula or some of the new French boats that will be found there. The American boating public would like nothing better than to see our fortunes of three years ago retrieved, and by a boat of the same name.

While on this subject of International Racing it also seems doubtful at this writing if there will be a challenge from England for the International Cup next year. As yet no definite word has come from the other side in regard to a challenge, and while the time limit within which a challenge can be sent does not expire until March 1st, it would seem as if the news of a possible challenger should have leaked out by this time. Captain Robbins of the Pioneer went back with the intention of persuading the Duke of Westminster to challenge again with a new boat, but nothing seems to have come of it as yet. The Duke is a man with many interests in other branches of sport to which he devotes himself, and as he never comes over with his boat it would not be surprising if he failed to find enough incentive in International motor boat racing to warrant the expense. One of the English sporting papers talks as if there was a chance of a challenge, but has nothing authoritative to say on the subject. I should like to see some other country, France or Germany for instance, have a "shy" at the famous trophy.

Since the thrilling race for the Mackinac Cup last summer the question has again come up of the advisability of changing the terminus of this event from Mackinac Island to some other place at the northern end of Lake Michigan. This mooted point has caused so much discussion in the past without accomplishing anything, that it is doubtful if a change will be made now, although there are many reasons to warrant it. In the first place, the latter part of the course is very dangerous, taking the yachts past the wicked Skilligalee and Waugachance reefs, and while it tries the skill of the yachtsmen, a race that cuts out this part of the course would be acceptable. Again, the people of Mackinac Island take but little interest in the race outside of what the hotel keepers can get out of the visiting yachtsmen and, barring a subscription to the original purchase price of the cup, have given the Chicago Yacht Club no assistance, financial or otherwise in holding the race. Other cities have offered liberal inducements for the honor of having the race finish in their harbors, among them being Harbor Point, Charlevoix and the Manitou Islands.

There has been considerable talk during the winter of buying South Manitou Island for the



CHICAGO AND COLUMBIA. THE TYPE OF FLAT "SIDEWALK" DEVELOPED ON LAKE MICHIGAN. UNDER THE OLD RATING RULE.

purpose of making a summer camp and permanent station for the Chicago Yacht Club and encouraging yachtsmen to build summer homes there. It is pointed out that at small expense an excellent harbor of refuge can be made there, far surpassing that of Mackinac Island, and if the plans should mature the Island could be made a most desirable resort. It is some 30 miles north of Point Betsey, which would give a race of about 240 miles in length, which is enough of a "hike" to suit the average yacht sailor.

Down on Great South Bay the yacht racing association of that name, which governs the regattas of the various clubs, is outlining a new system of racing for the coming season which promises to become popular. The Association proposes to consolidate the scattered regattas of the various clubs into four consecutive days of racing. It is scheduled to open the meet at Babylon on August 7th and to continue the racing at Sayville on the 8th, Patchogue on the 9th and Bellport on the 10th. As these towns are within easy access of each other the schedule could be carried out without trouble, and it is thought that under this arrangement boats will not have to be hauled out for cleaning or overhauling as many times as when the race days are scattered through the season. It will also given an opportunity to all the clubs to participate in a big cruise. Club races, however, can be carried on throughout the season at the convenience of their members, as heretofore. The plan has many points to commend it.

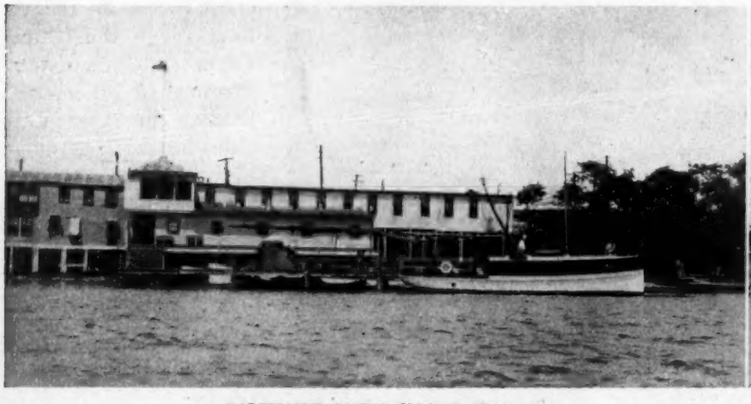
An echo of the Rochester Yacht Club-Royal Canadian Yacht Club dispute over the Canada's Cup was heard recently in the presentation of a handsome trophy by Commodore S. O. Richardson of the Toledo Yacht Club to the Yacht Racing Union of the Great Lakes for an international event to, in a measure, take the place of the Canada's Cup. The presentation was received by the delegates of all the clubs represented, which included the Lake Michigan and the larger Canadian clubs, with great enthusiasm and it is announced that Chicago yachtsmen are already busy with plans for a new boat to go after this trophy. If Canada will send a boat to give the race an International aspect, as they have signified their intention of doing, the contest may well rival in interest those for the cup for which so many famous boats have raced and which is now securely tied up in the locker room of the Rochester Yacht Club, owing to a difference of interpretation of the rules that govern that contest, caused by the claim of the Rochester Yacht Club to the right to race the Seneca. Whether or not this contest can ever *take the place* of the Canada's Cup races is another question. Personally I do not believe that you can ever substitute a trophy for one that has earned a place in the tradition of the sport.

The event would, of course, be held under the Universal Rule of measurement, and if the rules governing the Lipton and Nutting Cups could also be changed to rate the boats on this basis, it seems as if much more interest might be taken in these latter events and the result would be the building of a better fleet of boats by the Great Lakes sailors. The present rules of the last few contests have developed an extremely flat, scow type of boat which, while very fast, are poor sea boats and have but little room in them. A saner, abler and more comfortable type would undoubtedly be the result of this change in the measurement rules for these races.

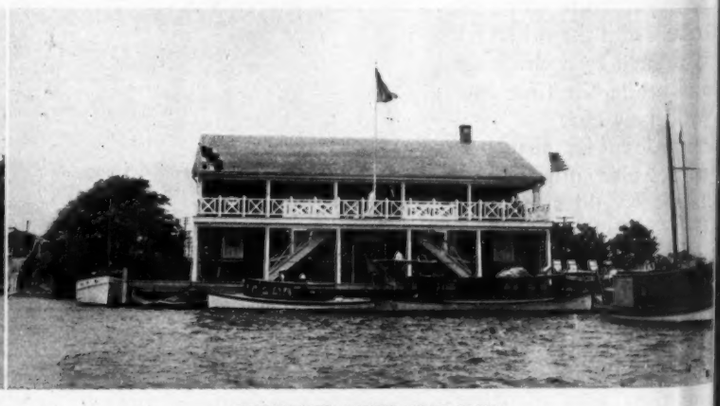
Down in Baltimore, where interest in yachting, both sail and power, has grown rapidly in the last few years, the situation is full of interest owing to the fact that there is talk of a combination of a number of clubs to promote a movement aiming to concentrate the yachting interests at Ferry Bar on Chesapeake Bay, to the south of the city. It is also proposed that the city of Baltimore buy a strip of water front at this point for a park, leasing club sites to the various organizations. There are already a number of boat clubs located at Ferry Bar while the Baltimore Motor Yacht and the Maryland Motor Boat Clubs have their homes there. There is also talk of a combination of the Corinthian and Baltimore Yacht Clubs as a possible angle of the situation. At present both the Corinthian and Baltimore Yacht Clubs have ideal anchorages and good locations, though they are comparatively inaccessible. By centering the yacht clubs at Ferry Bar and with improvement in the transportation facilities, all the clubs will be made much more accessible to yachtsmen living in Baltimore.

Small boat racing promises to receive an impetus in the New York Yacht Club next summer by the advent of a new one design class of small schooners which are being designed by B. B. Crowninshield of Boston, and are now building down in Maine. Six are already under construction, and while the class is not as large as the famous New York 30's, other boats may possibly be built before the season commences. The little boats are schooner rigged, 41 feet overall, 30 feet on the water, and 8 feet beam, and draw 5 feet 8 inches. The rig was suggested by the excellent performance of Mr. Crowninshield's little schooner Fame which he has sailed around Marblehead for the past few seasons.

A class on the Great Lakes that promises good sport for the Chicago Yacht Club members is the little fleet of 20-footers that is being built for the members of that organization. The directors of the club have inaugurated a novel plan in appropriating $3,000 to build and maintain a fleet of three of these little boats at the club's expense on the condition that enough members are found to build five more. This should be an easy thing to accomplish.



BALTIMORE MOTOR YACHT CLUB.



MARYLAND MOTOR BOAT CLUB.

A MOVEMENT IS UNDER WAY TO MAKE FERRY BAR THE CENTER OF THE BOATING INTERESTS AT THE HEAD OF CHESAPEAKE BAY.

The Inter-Club Yacht Racing Association of Massachusetts

A START IN CLASS B.

A HISTORY OF THE ORGANIZATION THAT HAS DONE SO MUCH TO KEEP ALIVE RACING AMONG THE OLDER BOATS. THROUGH ITS EFFORTS THE SPORT IS JUST AS SPIRITED AMONG OWNERS OF OUTBUILT BOATS AS WITH THE MEN WHO CAN AFFORD TO BUILD EVERY YEAR.

By HOLLIS BURGESS.

IN the year 1905, three prominent yacht clubs on Massachusetts Bay, the South Boston, Columbia and Winthrop Yacht Clubs, each held a regatta under uniform rules and classification which created so much interest that the following year four other clubs on the Bay, the Quincy, Wollaston, Squantum and Mosquito Fleet, joined with the former clubs in holding a series of races for Inter-Club classes.

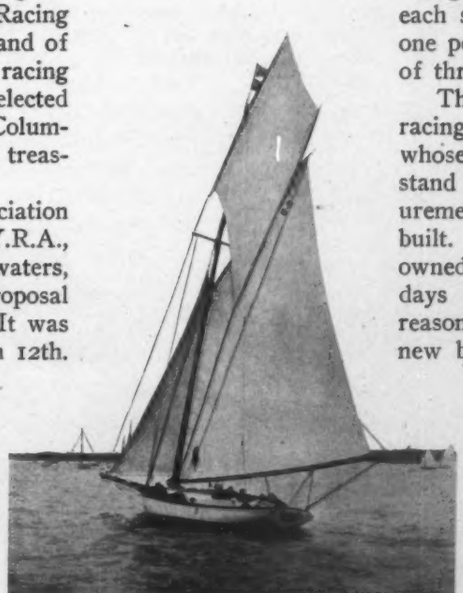
So much interest was taken in these events, that on February 26, 1907, representatives of the South Boston, Columbia, Mosquito Fleet, Squantum, Quincy, Wollaston and Winthrop Yacht clubs met at the handsome clubhouse of the South Boston Yacht Club and formed a permanent yacht racing organization to be known as The Inter-Club Yacht Racing Association of Massachusetts. John J. Harland of the South Boston Yacht Club, a well-known racing man of wide experience, was unanimously elected president, and Theodore H. Campbell of the Columbia Yacht Club was named for secretary and treasurer.

Previous to this the Yacht Racing Association of Massachusetts, familiarly known as the Y.R.A., had controlled yacht racing in Massachusetts waters, and an animated debate was held on the proposal that the new organization join the Y.R.A. It was finally agreed to postpone action until March 12th. On that date an important meeting of the Inter-Club Association was held at the clubhouse of the Mosquito Fleet Yacht Club. After long discussion the delegates voted not to apply for membership in the Y.R.A., thinking it better for the new association to stand on its own feet rather than to depend for support on the older organization.

At this meeting it was voted to classify yachts as follows:

Class A—Cabin yachts, 22 feet waterline, and over; Class B—Cabin yachts, under 22 feet waterline; Class C—Topmast sloops over 20 feet waterline; Class S—Open boats and freak cabin boats; Class D—Catboats.

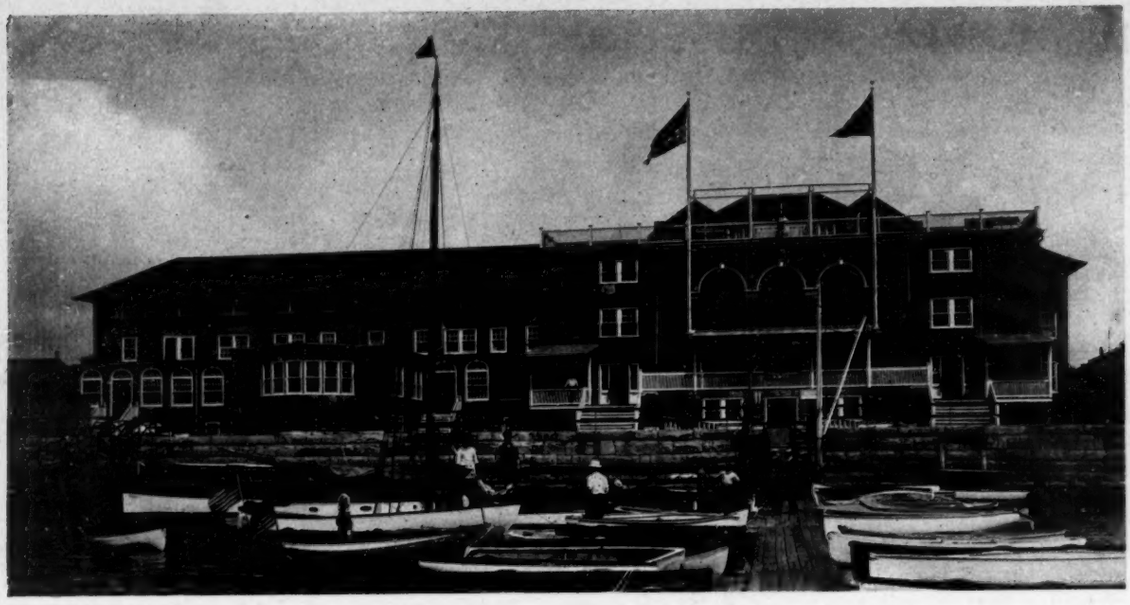
It was also voted that boats should be handicapped on overall length based on the Herreshoff table of time allowance; that no yacht's entry would be accepted without a measurement certificate from her club's measurer; that only Inter-Club yachts would be eligible for the Association regattas; and that each club should pay an annual assessment to the Association. Two weeks later the Association held another important meeting at which it was voted that the point system be used in figuring championship percentage for the season; one point being given for each start, one point for each boat defeated, and one point for each race finished, with a forfeiture of three points for failure to start in a race.



VIOLET, A CLASS A RACER BUILT BY HERRESHOFF 43 YEARS AGO. WINNER OF SCORES OF PRIZES.

The object of this Association was to foster racing among the members of the various clubs, whose boats had either been outbuilt or would stand but little chance in the open classes on a measurement rule formulated since these boats were built. It was recognized that many fast boats were owned by members of these clubs whose racing days had passed owing to the above-mentioned reasons, and whose owners could not afford to build new boats every few years and keep them up in a way that would have been necessary to have insured their success under the universal rule. It was a praiseworthy object and one which could be followed with good results in other localities.

Another important feature at this meeting was the reading of a communication from the Corinthian Yacht Club of Marblehead in which the Inter-Club boats were invited to take part in its annual Midsummer Series. This recognition from one of



SOUTH BOSTON YACHT CLUB, THE GUIDING SPIRIT OF THE INTER-CLUB ASS'N.

the most important racing clubs in the country was a welcome evidence of the rapid growth in power of the Association, and the success of the new organization was now still more firmly assured.

The Savin Hill Yacht Club, though not then a member of the Association, showed its interest by offering 15 prize pennants for the boats finishing first, second and third in percentage in their respective classes. The honor of holding the Annual City of Boston Fourth of July Regatta was secured by the Association. The racing rules of the Y.R.A. were adopted where they did not conflict with the Inter-Club regulations. It was also voted that balloon jibs and spinnakers be declared barred, and that each club be instructed to send a delegate to every regatta. It was also announced that as the main purpose of the Association was to promote the racing of existing craft, no new boats should be specially built for its classes. With all these points settled, the outlook for the season of 1907 was most promising and Boston yachtsmen showed great enthusiasm in entering yachts for the racing.

The South Boston Yacht Club, as usual, opened the season's sport with a big regatta on Memorial Day, providing, in addition to the 5 Inter-Club classes, 2 special classes and Classes Q—22 raters; I—18-foot knockabouts and X—Dories. There were 62 starters in all, and the Inter-Club classes made a fine showing.

On June 29th, in the Mosquito Fleet Yacht Club regatta, the Inter-Club classes again proved the banner attraction, 49 of its boats starting. Throughout the season the Association made a brave showing in every regatta and the public interest in yacht racing on Massachusetts Bay became very keen. It is interesting to note that about the middle of this season the measurement rule in Class A was changed from overall length to waterline plus one-third of the overhang, and much closer and more spirited racing resulted from this change.

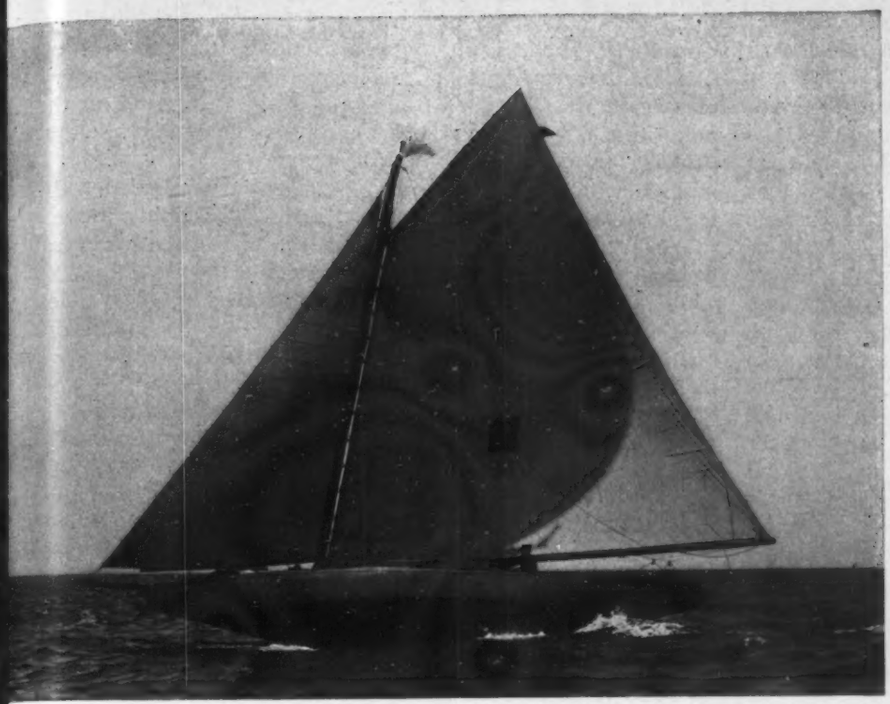
As an evidence of the great popularity of the Association among racing yacht owners it may be mentioned that in the list of total starters for the season there were 17 boats in Class A, 20 in Class B, 11 in Class S and 10 in the Catboat class. Championship pennants for the season were won by Eleanor in Class A, Sintram in Class B, Violet in Class C, Wawenock in Class S and Iris in Class D.

JOHN J. HARLAND, PRESIDENT OF THE INTER-CLUB ASS'N SINCE ITS ORGANIZATION.

The season of 1908 saw the first book published by the Inter-Club Association. For many years the Y.R.A. had published each spring an attractive book giving the names of its different officers and delegates, racing rules, championship winners and other interesting yachting data, and this first Inter-Club Association Book, though a very modest affair, was a step forward in the development of the organization. Those two indefatigable yachtsmen John J. Harland and Theodore H. Campbell were again elected President and Secretary-Treasurer respectively.

On March 11th at an important meeting held at the Mosquito Fleet Yacht Clubhouse a communication was read from the Handicap Association of Long Island Sound giving a detailed statement of its system of progressive handicapping. After considering the matter a few days

WILLIAM L. CARLTON, WHO HAS DONE MUCH TO PROMOTE INTER-CLUB RACING, WATCHING A START FROM THE JUDGES STAND ON THE CORINTHIAN YACHT CLUB PIAZZA.



VIRGINIA, A CLASS A RACER OWNED BY CHAS. L. JOY.

he delegates voted to adopt this system for a year in order to give it a fair trial. An Executive Committee consisting of Howard Gannett and D. M. Wiseley, with John J. Harland and Theodore H. Campbell, ex-officio, was appointed to classify and handicap yachts. On April 16th, the Lynn Yacht Club was admitted to the Association, and Labor Day was assigned as the date for its regatta.

The season of 1908 opened auspiciously with the usual Memorial Day South Boston Yacht Club regatta, 73 boats crossing the starting line, of which 42 were Inter-Club boats. Nine boats started in Class A, the first 6 finishing within 4 minutes of each other on corrected time, while out of 13 starters in Class B the first 9 boats finished close together on corrected time.

Throughout this season the racing was interesting but the handicap system created some dissatisfaction among the yacht owners and the entries fell off a little from the preceding year. The last race of the season was a noteworthy event, as it was held under the auspices of the South Boston Yacht Club to mark its 40th anniversary. The classes for this regatta were based on overall lengths and time allowance was figured from the Herreshoff table; 46 boats took part and the racing was unusually keen and spirited. After the race the championship pennants won by Inter-Club boats during the season were presented at the clubhouse and speeches sounding the praise of the Association were made by President Harland and Secretary Campbell, William Carlton, the popular Chairman of the Corinthian Yacht Club's Regatta Committee, Captain "Bill" Daly, Ralph Goudey of the Winthrop Yacht Club and many other well known yachtsmen. Alpha was awarded the championship in Class A; Winona in Class B; Thialfi in Class C; and I.X.L. in Class S.

Next day the annual marine parade of the Y.R.A., which always marks the close of the yacht racing season on Massachusetts Bay, was held from Hull to South Boston with a large number of Inter-Club boats on hand. It was the most picturesque spectacle seen on the Bay for many years, about 300 yachts taking part in it. The grand old Herreshoff sloop Violet, 43 years old, with her immense English jackyard topsail towering over the fleet, led the procession, and the gaily decorated boats, the champions with "cock of the walk" or "broom" pennants proudly displayed, made a wonderful picture as they passed in review off Marine Park.

During the month of March, 1909, after two spirited meetings, the Association voted to drop the handicap system which had not proved very satisfactory, and the waterline plus one-third of the overhang measurement was adopted for all classes except Class S, which was rated on overall measurement. The Herreshoff table of time allowance was once more adopted and the classes were arranged as follows:

Class A—Cabin yachts over 25 feet sailing length; Class B—Cabin yachts under 25 feet sailing length; Class C—Cabin yachts carrying topmasts; Class D—All catboats belonging to the Catboat Association; Class S—All open boats and boats that do not comply substantially with restrictions of other classes.

David M. Wiseley was elected Vice-President of the Association, President Harland and Secretary Campbell again winning a well deserved re-election, while Howard Gannett and Francis X. Crawford, with the three former officers ex-officio, were chosen for the Executive Committee.

The Association, after much discussion, voted to give power boat races, and to use the progressive method of handicapping them, dividing the boats into two classes, cabin and open boats. The delegates also voted to give no races except on Saturdays or legal holidays and to start no race before 2 P.M. except on holidays. The point system for figuring percentage was again adopted, although it was decided that only one point instead of three should be forfeited for failure to start in a race. The

SINTRAM, ONE OF THE CRACKS OF CLASS B.

Association Book for 1909 was much more pretentious than that of the year before and the popularity of Inter-Club racing was growing rapidly.

The 1909 season opened with 72 starters in the annual South Boston Y. C. Memorial Day regatta, 11 boats starting in Class A which proved the leading class of the season. The catboats appeared without jibs as their owners had agreed to race that way this year, and they certainly made a much better appearance without them. The racing throughout the season was very interesting. Alpha won the championship pennant for the season in Class A; Lobster in Class B; Thialfi in Class C; Iris in Class D and Zoe in Class S. Power boats made a good showing during this season, many of them entering in the various regattas.

On February 8, 1910, the Cottage Park Yacht Club, of Winthrop, became a member of the Association—a most welcome addition, as this is one of the most progressive of the younger clubs on Massachusetts Bay. A few weeks later, at a special meeting of the Association held at the Mosquito Fleet Yacht Clubhouse, it was voted to change the classification in Classes A and B, making Class A contain all yachts over 26 feet sailing length, and Class B all yachts under 26 feet sailing length. The invitation of the Boston Yacht Club for an open race August 2nd at Marblehead was accepted, and it was voted that this race and also the races of the Corinthian Yacht Club during Midsummer Week should count for championship percentage.

The season opened with 88 starters in 12 classes, the greatest fleet of entries seen for many years in the opening event. Class A made a great showing with 11 starters, 7 of which Novice, Marie, Eleanor, Marie L., Flirt, Sinbad and Virginia were newcomers in the class, and much interest was manifest in their initial performances. Virginia, owned by the writer, which had arrived from New York that morning, won first prize, with Novice right at her heels for second place, and Marie, Eleanor and Marie L close behind. 8 boats started in Class B, 7 in Class C, 8 in Class S, 10 in Class D, and 11 power boats.

The racing throughout the whole season of 1910 was very close and every regatta was exceptionally well attended. A racing run was held by the Association on July 31st, from City Point, South Boston, to Marblehead for cups presented by the Corinthian Yacht Club, 29 boats participating in this event. The old Herreshoff sloop Violet covered herself with glory by making the fastest time of any boat in the fleet, covering the 16 miles in 2 h. 23 m. While this event was being held the Quincy Yacht Club also held a run from Quincy to Marblehead. That night the rock-bound harbor of Marblehead was filled with Inter-Club yachts ready to take part in the Midsummer Series.

All records for a series of races ever held in American waters were surpassed by the number of starters in the Corinthian Yacht Club races of the last four days of the week. On Wednesday 138 boats started in their respective classes. On Thursday 140 boats came to the line. On Friday 120, and on Saturday 112, making a grand total of 510 starters for the four days.

During the season over 50 different sailing boats figured in the various Inter-Club regattas, championships being won by Marie L in Class A; Anna C in Class B; Violet in Class C; Dolly III in Class D; Wawenock in Class S; Torment in the Cabin Launch Class, and May S in the Open Launch Class.

The annual fall meeting of the Association was held October 21st, at the South Boston Yacht Clubhouse, with delegates from all of the 9 clubs in attendance. It was voted at this meeting that all boats to be eligible to Classes A, B, C, and S must be at least two years old, this rule not to apply to then-existing boats. It was also voted that the size of anchor cables to be carried according to the Association regulations should be reduced from an inch and one-half to three-quarters of an inch, and that the penalty of one point for not starting in a race should be removed.

On January 7, 1911, the first Inter-Club Association banquet was held at the Quincy House, Boston, with 136 yachtsmen present. These represented not only the 9 clubs of the Association but also many other clubs of Greater Boston.

On February 27th the annual meeting of the Association was held at the South Boston Yacht Club. John J. Harland, well known to all Massachusetts yachtsmen by the title of "Inter-Club Jack" was elected President for the fifth consecutive time, and Theodore H. Campbell was also honored by his fifth election.

(To be continued)

A Novel French Hydro-Aeroplane

A NEW TYPE OF AIR CRAFT FOR FLYING OVER THE SURFACE OF THE WATER.

With the experimenting that is being done in hydro-aeroplanes for skimming over the surface of the water and for alighting on it when necessary, the accompanying illustration of a new French machine of this type will be interesting. While she is of the biplane type of body, the steering equipment is very much like the French monoplanes.

A FRENCH AIR CRAFT WITH PONTOONS FOR GLIDING OVER THE SURFACE OF THE WATER.

It will be seen that there are three pontoons provided on which the wings of the plane rest on the water, and one pontoon in the rear to support the tail and the vertical and horizontal rudders. The propeller projects aft beyond these rudders. The photograph was taken on the river Seine, where she was being tried out, the craft being a product of the factory of the Aeroplanes Voisin. This sport is becoming quite popular in this country.

Engine Troubles That May be Avoided

HOW TO PREVENT MANY OF THE EXASPERATING TRIALS THAT FREQUENTLY BESET THE NOVICE. MOST OF THEM DUE TO INEXPERIENCE AND LACK OF KNOWLEDGE OF THE "INNARDS" OF A GAS ENGINE.

By WILBUR H. YOUNG.

ONE of the first thoughts which occurs to the mind of the prospective purchaser of a motor boat is "How on earth (or sea) will I ever be able to make the blamed thing go if it stops?" Manufacturers are prone to say: "My motor is so simple a *child* can run it," but it would be a wise child indeed who could locate and correct the various troubles which are likely to occur with any motor when in the hands of an amateur.

But (and it is a but that looms large on the horizon of motor-boatdom), why should this engine stop just when it was most necessary that it keep on running? It was working fine all day, when suddenly it gave a few coughs and a kick or two and then died—dead! And all the tinkering with the little bowl on the side and the flipper on the box that "they" said to do had no effect whatsoever.

I have read a great many articles covering the experience of novices during their first season or two, most of them written in a humorous vein, which are, however, instructive, but after one has had all of the troubles with his motor that he possibly can, the ones which seemed real knotty problems may be boiled down to a few simple ones which might have been avoided had the proper precautions been taken. In fact 98% of these troubles occur from causes which we can classify as follows: 1.—incorrect installation of the engine; 2.—wrong type of propeller; 3.—ignition apparatus poorly installed or of the wrong type; 4.—imperfect carburetion; 5.—improper lubrication; 6.—poor water circulation. The other 2% may be charged against the engines themselves.

I will take up the troubles in the order listed above:

INSTALLATION, the first item, is an exceedingly important one. Few realize the amount of horsepower necessary to turn a piece of shafting which is bound to a more or less degree at a number of points of its length. It is necessary, therefore, to have the engine beds so installed as to properly take up the thrust and distribute whatever vibration may occur from the engine over as large a portion of the bottom of the boat as is possible, and also to have the engine shaft in perfect alignment with the propeller shaft so that no binding may occur.

The foundation timbers should be of oak, and if these are made not less than 2 inches in thickness for to 10 or 12 H.P., and 3 inches for the larger horsepower, and properly shaped to conform to the hull, and firmly bolted through the timbers, a substantial foundation will result. Figure 1 shows a simple and easily installed engine bed which may be used on engines up to 25 horsepower. Horsepowers larger than this will usually require foundation timbers especially designed for each particular installation. Occasionally hulls will be found, especially those of old sail boats which are being converted into motor boats, in which the timbers and keel may not have the strength they had originally, and it may be necessary to reinforce the keel with a keelson laid on top of the timbers and bolted through the keel.

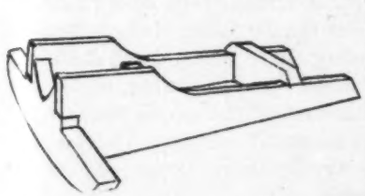


Fig. 1. A rigid engine bed built on this plan will save lots of engine troubles.

See that the shafting comes in strict alignment before bolting it down. In the smaller horsepowers this can be ascertained by noting whether the two halves of the flange coupling which connects the propeller shaft to the engine or to the reverse gear come together evenly all around. If the two halves of the coupling do not "fair up," the engine should be moved sidewise, or it may be necessary to put shims under the engine frame, or cut away the engine bed until the couplings come fair. After the engine is bolted down, the flywheel should be turned over, with the spark plugs removed, noting at the same time how much force is necessary to do this. The shaft should then be coupled to the engine, which should turn just as freely as when it was not coupled.

Self-adjusting struts and stuffing boxes are obtainable today which permit a considerable variation of the alignment between the engine and shaft without any binding, but even with these improved fittings it is best to use every care possible to have the engine correctly installed.

PROPELLERS.—One of the hardest things to select is the correct style, diameter and pitch of propeller. In fact an eminent naval architect when asked what method he would pursue in selecting the right kind of propeller for any particular boat replied, "I would first be provided with unlimited means and then try as many propellers as I had time!" It is possible, however, taking the sum of many experiments, to select a wheel which will give very good results; but one frequently finds an engine which will develop its horsepower most efficiently at eight or nine hundred revolutions per minute, loaded down with a wheel which permits it to turn only half of that number, which, of course, cuts down correspondingly the amount of horsepower developed. In small two-cycle engines where they are coupled direct to the propeller shaft this also makes the engine very hard to start.

The engine manufacturer lists in his catalogue the sizes of propellers which are usually sent out with the different engines, but if a complete description of the boat is sent with the order for the engine, the manufacturer will select with considerable care a propeller which will usually give good results, although it may sometimes be necessary to try two or three different sizes or types before the one that will give the best results is obtained. It is often well to consult the propeller manufacturer, who, as a general rule is better able to select the proper wheel, particularly if correct data as to the performance of the original propeller is given to him.

IGNITION.—To the novice, ignition apparatus seems strangely confusing, whether the spark be produced by a magneto, dry battery or dynamo and storage battery, for either make-and-break or jump spark type of ignition.

Every part of the equipment should be the best obtainable. Moisture is a deadly foe to almost all ignition systems, consequently great care should be taken to protect the various parts and the wiring should be especially protected.

If the engine is installed in an open launch and it is desired to furnish the current from dry cells or storage battery, a

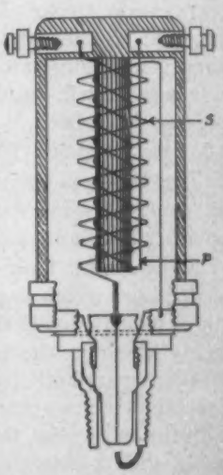


Fig. 2. Sectional sketch of combined jump spark coil and plug.

system used extensively and with excellent results is one where the spark coil and plug are combined. This system is absolutely waterproof, and when properly installed will give as good results as any that could be used. Figure 2 is a sectional drawing of this spark plug and coil, and Figure 3 shows the best method of installing and connecting this system.

A high tension magneto with distributor would furnish a good hot spark, but it will be necessary to properly protect the wiring from moisture. This applies also to the ordinary box coil and spark plugs, although the latter system does not usually give as hot a spark as a high tension magneto. The high tension wire should never be permitted to touch the frame of the engine or any ironwork connected with it. All of the high tension leads should be made as short as possible.

If dry batteries are used, one can secure them placed in wooden or iron boxes and covered with paraffin or a like substance which prevents the moisture from entering, and greatly lengthens the life of the dry cells. This will save lots of trouble with poor spark due to moist or week batteries, though even here it will be necessary to test them with an ammeter occasionally to find if ignition trouble is due to run-down cells. Storage batteries of the ignition type are supplied with hard rubber or composition cases, which provide for the insulation, the only care necessary being to keep the battery charged, and at the end of the season take precautions to prevent the plates from sulphating. Where a dynamo is used in connection with the storage battery, an automatic cutout should be installed to prevent the storage battery from discharging its current through the dynamo when not in use. If this is not done, one will have ignition failure through exhausted battery before he knows it.

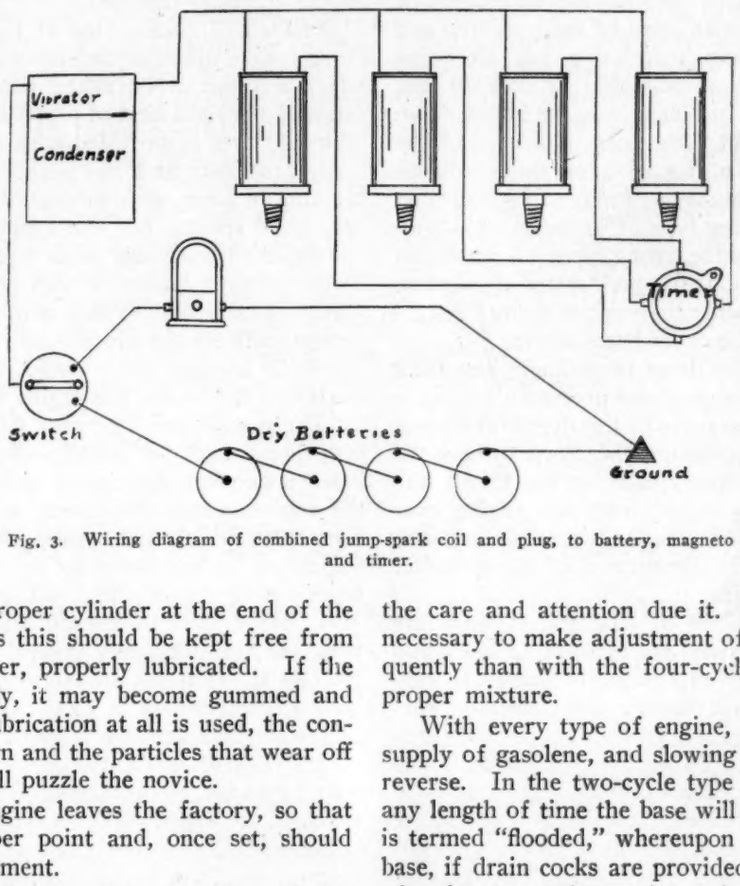


Fig. 3. Wiring diagram of combined jump-spark coil and plug, to battery, magneto and timer.

Timers or distributors are supplied with all motors. The function of this device is to cause a spark to appear in the proper cylinder at the end of the compression stroke. At all times this should be kept free from dirt, and in the case of the timer, properly lubricated. If the timer is not lubricated sufficiently, it may become gummed and poor contact will result. If no lubrication at all is used, the contact parts will become greatly worn and the particles that wear off may cause a short circuit that will puzzle the novice.

The timer is set when the engine leaves the factory, so that the contact is made at the proper point and, once set, should remain so without further adjustment.

A frequent ignition trouble is the short-circuiting of the spark plugs which is caused by soot forming on a portion of the plug which is inside the cylinder. This can be obviated by thoroughly washing the plug in gasolene, or if necessary it should be taken apart and cleaned. In the case of porcelain plugs, if the porcelain becomes cracked, even minutely, a new plug is necessary. With the mica plug, the mica sometimes becomes pitted or broken, and in such a case a new one is also necessary.

If the engine misses fire, and you find the trouble is not with the carburetor, the fault is almost certain to be with the ignition. The spark plugs should be examined and if found to be in good condition they should be laid on the engine frame and the current turned on; the flywheel should then be turned over and a good spark should appear at the points of the plug. If this spark does not appear, the wiring should be examined for short-circuiting, loose connections or moisture. If no trouble is found there, the timer should be examined. Next try the coils and see if the vibrators are adjusted so that they vibrate properly when the flywheel is turned over and contact is made by the timer. After trying all these without result, the only remaining apparatus to examine is the battery, which should be tested with an ammeter.

It is always best to test the ignition apparatus before pulling up anchor, and where dry cells only are used for supplying current it is well to have an extra set on hand. I have a vivid recollection of drifting 4 hours on Long Island Sound on account of the dry cells playing out, and though dozens of motor boats should have passed us, on this particular occasion we saw only one boat, and when she pulled alongside, her owner calmly stated that he had no extra batteries, and proceeded on his way followed by our benedictions. Finally we found several played out dry cells, and with a hammer and nail opened the top coating of pitch and poured some sea water into them. After allowing them to stand for awhile, we connected them together and although the spark they furnished was a weak one, we succeeded in getting to a supply station where we secured some new ones—*two* sets.

CARBURETION. — With the good carburetors to be had today there is little the user can do to improve their working outside of the two or three adjustments that may be necessary from time to time. The design of the intake manifold enters largely into the matter of good carburetion. Where a multiple-cylinder engine is used, the intake manifolds are necessarily of a different design from those on single-cylinder engines, and on the standard makes of motors this point has received the care and attention due it. With the two-cycle motor, it is necessary to make adjustment of the carburetor a little more frequently than with the four-cycle, as it is more sensitive to the proper mixture.

With every type of engine, back-firing indicates too small a supply of gasolene, and slowing down of the motor indicates the reverse. In the two-cycle type if too much gasolene is fed for any length of time the base will become full of gasolene, or as it is termed "flooded," whereupon it will be necessary to drain the base, if drain cocks are provided, or to shut off the needle valve of carburetor and turn the engine over by hand until it starts. It should then be allowed to run until it finally stops as a result of the gas in it being exhausted. The needle valve should then be opened and the engine cranked two or three times, when it should start again. Flooding may be caused by dirt getting under the float valve seat, or by wrong adjustment of the needle valve. An indication of too rich a mixture is shown if the engine fires every other revolution, whereupon the needle valve should be closed slowly until this trouble is overcome.

LUBRICATION.—It goes without saying that it is necessary

(Continued on page 164)

The Stability of Motor Boats

By LAWRENCE B. CHAPMAN.

Junior Member Society of Naval Architects and Marine Engineers.

PART I. GENERAL CONSIDERATIONS AND THE STABILITY OF MOTOR BOATS.

THE question of stability is one of extreme importance in every type of craft that navigates the water. Safety, seaworthiness and comfort all depend on the stability of the boat. Stability gives to the sail boat power to carry sail and to the power boat safety and comfort in a seaway. The manner in which a boat behaves in rough weather depends on her stiffness, and stiffness is directly dependent on stability. That the average boatman understands very little about stability is apparent from the many poorly designed motor boats that one sees. It is to help this man and also to give the sail boat sailor a better understanding of the subject that this article is written.

First of all we have to consider briefly the theoretical side and obtain a conception of the fundamental principles involved, and then we will turn to the practical side and take up some interesting and instructive cases.

The determining factors of stability are, center of buoyancy (B), center of gravity (G), and metacentre (M). The location of these three points with respect to one another determine the stability of the boat. Center of buoyancy (B) is nothing more than the center of the under water portion of the boat, and at this point the resultant of the upward force or buoyancy acts. (b-B Fig. 1). Center of gravity (G) is the combined center of the hull and all the weights that go into the boat. It may be high or low, forward or aft, depending on the location of the heavier weights. At this point, the total weight of the boat is considered to act. (a G, Fig. 1). As the buoyancy is equal to the weight, these two forces are equal and act in opposite directions. If no other forces are acting on the boat, such as wind or waves, these two forces must act in a vertical line, and if the boat is not designed so that they are over each other at the normal waterline she will shift until one is over the other. Usually the weights are symmetrical in a transverse plane, but quite often we see a boat down by the head or stern due to poor judgment in the location of the weights.

The metacentre (M) is a definite fixed point dependent on the form of the boat and the angle of inclination. It is the intersection of the new vertical through B' with the old vertical through G and B shown clearly in Fig. 2. When a boat is inclined, the weights, if fixed, remain the same and G does not move, but the center of the underbody (B) shifts to a new point, B', due to the new form of the underbody. The exact location of these points does not interest the yachtsman, but approximate methods of finding them will be given later.

G is generally above B, quite often in the neighborhood of the load waterline, Fig. 1, but in some types, such as fin keel boats, it is below as in Fig. 7. If the boat shown in Fig. 4 is inclined to position shown in Fig. 5, it will be seen that the new vertical cuts the old one below G, while in Fig. 2 it cuts it above G. If M. falls over G the boat is stable, and if inclined will return to the upright position; if M falls below G the boat is unstable and will capsize; if M falls on G the stability is neutral and the boat will stay at any angle to which she may be inclined.

A little study of Fig. 2 will show that as the boat is inclined more and more, M comes down lower and lower till it falls below G. When this happens, the boat will capsize. If the reader will lay aside all consideration of M and study Figures 2 and 5, he will see in the first case how the forces acting (shown by arrows) tend to right the boat and in the second to capsize it.

The distance G M, Fig. 1, is called the metacentric height and as will be seen from Fig. 2 it varies for the same boat for different inclinations. It is customary to consider G M for the boat in an upright position. For reasonable angles of heel, it changes but little. G M is a direct measure of stability and of the most extreme importance for safety, comfort and seaworthiness in general. We have already seen that if G M is negative, that is, if G is above M, the boat will capsize. From the several figures we have seen what M is in diagrammatic form and learned that its location depends on the boat's form.

Let us now consider M in a new way. The form of the boat determines B M or distance between center of buoyancy and metacentre, Fig. 1. As B is generally below G, G M is generally

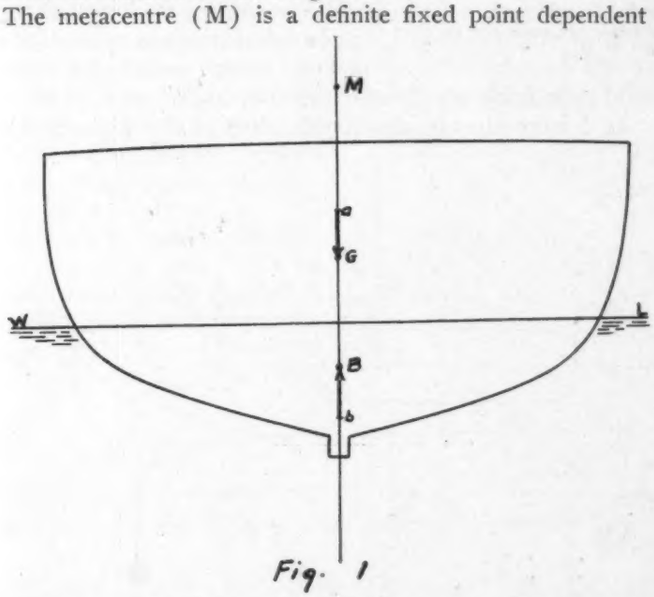


Fig. 1

Determining factors of stability. B, center of buoyancy; G, center of gravity; M, metacentre.

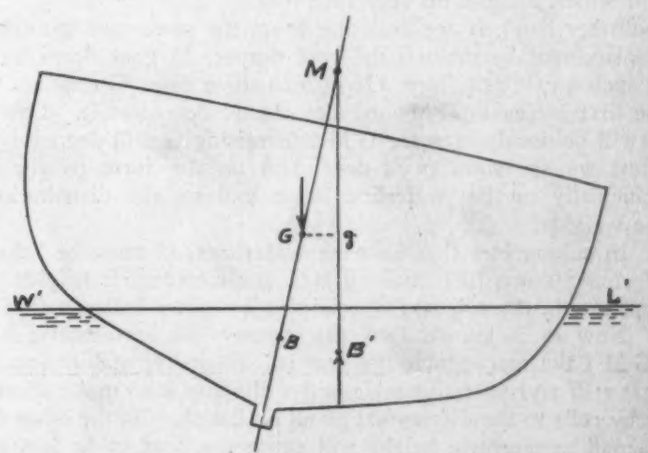


Fig. 2

In figure 2 metacentre is the intersection of the new vertical through B' with old vertical through B G.

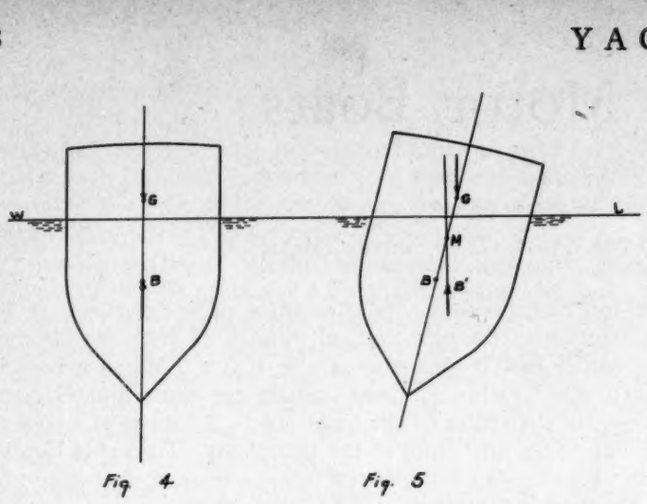


Fig. 4 Fig. 5

If metacentre (M) falls below center of gravity (G) boat will be unstable.

somewhat smaller than B M, but in some sailing craft, it may be greater as in Fig. 7.

The general method of procedure to determine B M is by calculations from the lines and to locate G by taking moments of all the weights going into the boat.

$$BM = \frac{\text{Moment of Inertia of load water line}}{\text{Displacement in cubic feet.}}$$

Now the moment of inertia of the waterline (1) takes a little trouble to find but can be determined closely by the following formula: (See Figs. 1 to 5).

M. I. = L. x cube of Beam x K where K is a constant depending on the form of the waterline. It will be seen at a glance the importance the beam plays in stability, B M increasing as the cube of the beam. (The beam is at the waterline.)

(1) $$BM = \frac{KLB^3}{D \text{ in cu.ft.}}$$

where K=Const., L=Length, B=Beam, D=Displacement.

From this formula we see that if we keep the displacement the same, that is, making the boat shallower and wider, M goes up very fast. On the other hand, if we keep the beam the same and increase the displacement by making the boat deeper, M goes down but not at such a rate as before. If in both these cases G remains fixed, the first increases G M and the second decreases it. Lowering G will obviously increase G M and raising G will decrease G M. Thus we see stability is dependent on the form of the boat, principally on the waterline beam and on the distribution of the weights.

In submarines that have no waterlines, G must be below B. M comes down to B making B G the metacentric height. G is kept low in the submerged condition by water ballast taken in.

Now it is known that the greater the metacentric height (G M) the more stable the boat is. Excessive stability makes a boat stiff and uncomfortable and will cause it to make short and jerky rolls to the discomfort of all on board. On the other hand, a small metacentric height will cause the boat to be less stable but make long, slow and easy rolls.

So we see a large G M gives great stability and a stiff uncomfortable boat in a seaway, and a small GM gives less stability but an easy and comfortable boat in a seaway. What we want is a happy medium between the two. Metacentric heights vary from a few inches in some craft to nearly 13 feet in some of the monitors. The large Atlantic liners have a very small G M, from 3 to 9 inches, and roll slowly and easily in a seaway.

Too much emphasis cannot be laid on the effect of metacentric height on comfort. Most motor boat owners try to get their weights as low as possible to "make her safe," not thinking or perhaps knowing of comfort. It is true of some of the high-sheer cabin boats that weights should be kept low to offset the effect of the extremely high house, but well designed boats do not have these high cabins.

There is a case on record of a new lightship that rolled violently and made things very uncomfortable for all on board. An "expert" was sent for and he caused large quantities of ballast to be put into the ship's hold to make her steady. Consequently, when the next storm came the lightship snapped about more violently than before and threw the crew off their feet as fast as they could get up. A naval architect was now sent for, and he caused the ballast to be taken out and, to the surprise of all, placed two lead balls at the mastheads. When the next storm came the ship rolled easily. What caused this? Simply that the center of gravity (G) was raised in the second case, decreasing G M and thus making the boat easier in a seaway.

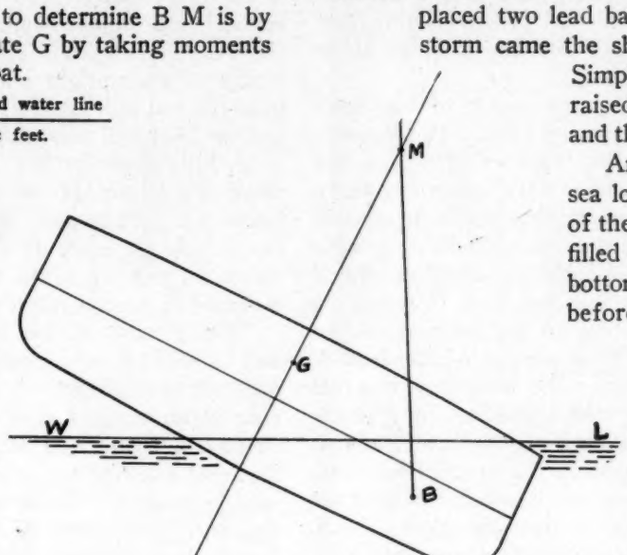


Fig. 9

When a flat boat is heeled she decreases her beam and thus alters the position of M.

Another case is of a vessel that put to sea loaded with railroad iron. On account of the great weight, the hold was only partly filled and all the rails were placed at the bottom. The ship met a storm at sea and before some of the rails could be brought on deck she had jerked her masts, funnels and deck houses overboard, so violent and short were her rolls. In this case G was probably below B, giving her an excessive G M. These two cases may help some of the readers of this. If your boat makes short and snappy rolls, bring some of your weights up and outboard if possible.

A warship with heavy deck guns and high side armor rolls slowly and easily, while except for this she would be a fairly stiff boat on account of her great beam.

As I have already mentioned, some of the high-sheer cabin

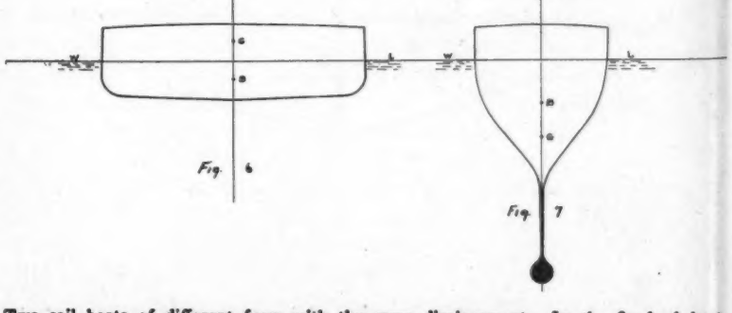


Fig. 6 Fig. 7

Two sail boats of different form with the same displacement. In the fin keel boat, center of gravity (G) is below center of buoyancy (B).

boats have a very small G M and many of them are extremely dangerous and would capsize in a heavy sea. There is also a tendency to carry tenders on the cabin tops of these boats, which is a bad practice. If in a heavy sea a wave should break and fill one of these tenders the motor boat might be in an extremely dangerous condition.

The effect of G M on rolling will be taken up more fully when we consider rolling in a seaway, in part II.

Let us now consider Figures 6 and 7, which for a clearer illustration are sail boats of the same displacement. Fig. 7 has G low by reason of her lead keel—in fact G is below B. In Fig. 6, the distance between G and B is seen to be very small. Now, Fig. 7 has a waterline beam of say 6 feet while Fig. 6 has a beam of 12 feet. As the displacements and lengths are the same for both boats, B M will vary as KB^3, or the two B M's will be to each other as 1 : 8. Thus while Fig. 7 has a low G and a large stability of weight, Fig. 6 has a high G and small stability of weight, but 8 times more B M or stability of form. Probably the two metacentric heights (G M) would be about equal. Suppose the two boats in question were heeled over by the wind to the same angle. The waterline beam of Fig. 7 would remain about the same even after her deck went under, while Fig. 7 would take a position shown in Fig. 9 and her waterline would be cut down considerably. As we learned that the height of M depended upon the $\frac{3}{\text{BEAM}}$, G M would decrease very rapidly and the boat would probably capsize.

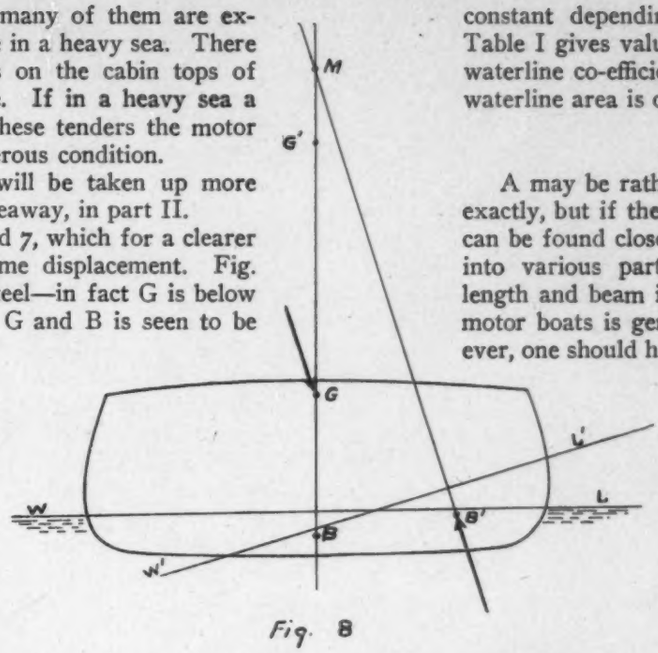


Fig. 8

Diagram showing stability of canoe. M is well above G, when load is low, but when the occupant rises, G is raised to G'.

It should be remembered that while the two forces shown acting at G and B tend to right the boat, there is another force which caused it to take this angle of heel. In this case it is the force of the wind; in other cases it is the force of the waves which set up rolling. This will be taken up in Part II.

For those who wish to go a little deeper into this subject, an approximate method of finding G M will now be given. G can be located by taking the center of gravity of the hull and various weights and combining them. It can be often guessed at quite closely in small boats by using good judgment. B can also be located very closely. If one has the lines of the boat from the designer, the location of B is generally given. From formula No. 1 we can determine B M if we know the length, beam and displacement in cubic feet (1 cu. ft. = 64 lbs.). The displacement is usually the uncertain quantity but can be generally found quite closely by comparison with boats of known displacement. The only other thing needed is K. This is a constant depending on the form of the waterline. Table I gives values of K for various values of A, or waterline co-efficient. A is simply the proportion the waterline area is of the enclosing rectangle.

$$A = \frac{\text{Area of water line}}{\text{Beam x length}}$$

A may be rather hard for the reader to determine exactly, but if the lines are at hand the waterline area can be found closely by dividing the waterline area up into various parts. Quite often everything except length and beam is left to approximation, for data on motor boats is generally lacking or inaccurate. However, one should have his various approximations fairly close or he will get hopelessly lost.

As an illustration, the following example is given: Length = 40 ft. W. L. Beam = 10 ft. Displacement = 35,200 = 550 cu. ft. "A" = .70, K (from table I) = .042. B G = 2.5 ft. (Fig. 1).

Our formula:

$$BM = \frac{K \times B^3 \times L}{D} = \frac{.042 \times 10^3 \times 40}{550} = 3.06$$

GM = BM — BG = 3.06 — 2.50 = .56 ft. or 7". This gives a fairly stiff boat, but yet not too stiff.

TABLE I

W.L.Coef. A	K	W.L.Coef. A	K
.50	.023	.80	.055
.55	.026	.85	.062
.60	.031	.90	.069
.65	.036	.95	.076
.70	.042	1.00	.083
.75	.048		

Another interesting example of stability is a canoe. Canoes with flat bottoms and sections as shown in Fig. 8 are very stiff and under ordinary conditions hard to capsize, contrary to popular belief. There are many canoes made with round bottoms, but these are rather dangerous for they go over quite easily. Let us examine the stability by using formula 1. B is in general from one to two inches below the waterline or about an inch above the bottom. G depends on the location of the occupants. With people sitting in the bottom, it is near the gunwale shown at G, Fig. 8; with people sitting on the level of the gunwale, it will be about a foot above this. For the canoe in question,

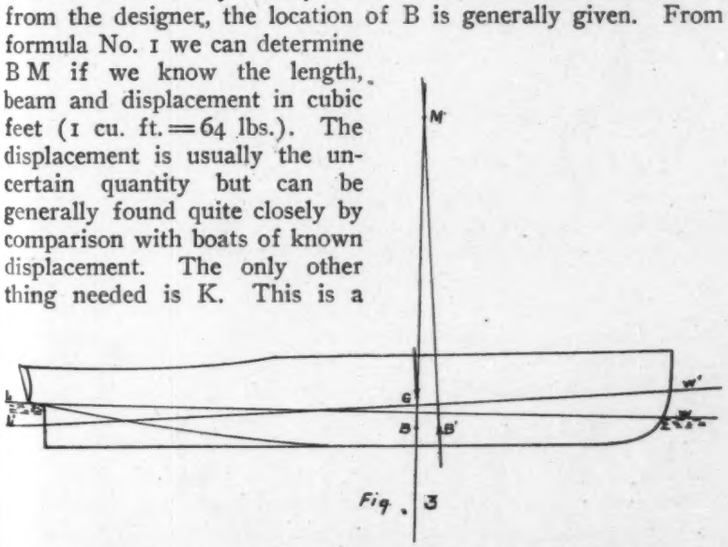


Fig. 3

Longitudinal metacentre height is of importance as regards pitching.

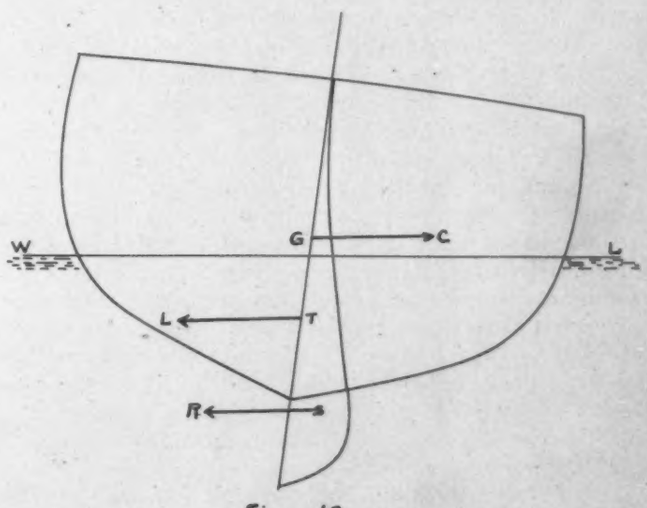


Fig. 10

Effect of centrifugal force and rudder force on boat making turn at high speed.

suppose the length is 16 feet, the beam 3 feet, the waterline coefficient = .60 (K = .031) and the weight = 100 lbs. (1.56 cu.ft.).

$$B.M. = \frac{K \times B^3 \times L}{D\ (cu.ft.)} = \frac{.031 \times 3^3 \times 16}{1.56} = 8.3 \text{ feet}$$

This gives a value of G M = from 6 to 7 feet depending on the location of the occupants. It will be seen at once that a canoe is an extremely stiff craft. Canoes of this type will invariably throw the occupant overboard if he tries to capsize them by leaning on the gunwale, so great is their stability. Now suppose the canoe is heeled to position shown by W'L', Fig. 8, and the beam decreased to 2.3 feet. By carrying through another computation using this beam M comes down to 3.5 feet shown at M. If the occupants should attempt to rise while in this condition G goes up to G^1 and capsizing will follow quickly. It will be seen that as a canoe is heeled her waterline beam is decreased quite rapidly and any attempt to stand and tip the canoe will bring disaster.

G M changes on all boats as they are heeled, due to change in waterline beam. Sometimes it may be increased as in the case of some Atlantic liners.

All this discussion has been about transverse metacentric height. There is a longitudinal one also, Fig. 3, but as this depends on the cube of the length, it is very large and out of consideration as far as stability is concerned, but of importance as regards pitching.

Another point worthy of mention is free water in a boat's bottom. The effect of this on stability is very great and is realized by very few amateurs. The center of the gravity (C.G.), of the free water is not at the center of the water but at its metacentric height. Thus, we may have a quantity of free water in the bottom of a boat whose C.G. is not low down as one would imagine, but at a considerable distance above it, depending on the surface. It acts the same as a suspended or hanging weight whose C.G. is not at the weight but at the point of suspension. Formula 1 can be used to determine the height of C.G. by considering the free water surface a waterline and the quantity of water as the displacement. It will be observed that the effect of the water does not depend on the quantity present but on the *area* of the free surface. Thus, a small quantity of water, say 100 lbs., in the bottom of a boat has its C.G. not in the bottom of the boat but some 2 or 3 feet above it. This same discussion holds likewise for fuel and water in tanks, and tanks should thus be small or well divided.

Another case where the question of stability comes in, more especially in high speed boats, is in making turns. I have already said there is always some force acting to cause a boat to heel. In this case, centrifugal force comes into play. As this force depends on the square of the speed, it will be seen that it plays a considerable part in high speed boats. Fig. 10 shows a boat making a turn at high speed; the centrifugal force acting at G is shown as C.G. and the lateral resistance of the boat to moving sideways is shown as L.T. There is a third force acting, shown as R.S., the force acting on the rudder, the rudder being considered to be hard over. This force may be high or low depending on the center of the rudder. In this case (a high speed motor boat of shallow draught and deep rudder), it is very low and tends to offset the effect of the centrifugal force. In other boats, it is higher and the boat is heeled to a greater degree away from the center of the turning circle. In some boats with extremely deep rudders R.S. may have a greater effect than C.G. and the boat will heel towards the center of the turning circle.

In the case shown in Fig. 10, it will be seen that the force R.S. keeps the boat on a fairly even keel due to the rudder being thrown hard over. If, during the turn, the rudder is suddenly brought amidships and the force R.S. removed, the boat will take a dangerous heel due to C.G. and might capsize.

If the principles outlined in this article are mastered and a little time is taken to observe boats under various conditions, one should have a clear understanding of stability in a short time.

Planking for the Motor Boat

POINTS TO BEAR IN MIND WHEN SELECTING WOOD FOR THE PLANKING. WATER ABSORPTION PLAYS A LARGE PART. METHODS OF CONSTRUCTION.

By GEORGE E. WALSH.

THE speed, durability and utility of the motor boat depend as much upon the kind of planking used and the method of its application, as upon any other single item in its construction; and no little attention has been given to the subject by naval architects and boat builders, both professional and amateur. In the knockdown boats the amateur finds little difficulty in setting up and bolting together the framework, but when it comes to the planking, about four out of five hesitate and frequently run up against snags that cause a good deal of discouragement. Both the appearance of the boat and its speed and strength are influenced in a large measure by the planking.

The first question to consider, and it is a serious one with many boat builders, is the kind of wood to be used for planking. Of course, the question is often settled finally by the condition of one's pocket book. If economy must be practiced at every point, the choice of woods is limited to a few of the cheaper varieties.

Most Western boats probably are planked with cypress and those in the East with white cedar. The reason for this is that these woods are indigenous in the respective sections. On the Pacific Coast redwood is employed also for planking, and more or less fir. White pine was formerly used a good deal for planking in the East, but it is not in much favor today. The same is true of oak. Comparatively few motor boats are planked with oak on account of the weight of this wood.

The aim in motor boat building is to secure as light a hull as is consistent with strength and durability. In speed boats these qualities are often sacrificed for speed, yet even here, lightness is a question of the thickness of the planking more than it is of wood.

Where money consideration does not enter into the proposition, mahogany and Spanish cedar are probably the best woods for planking. This is not so much because of their looks as of the wonderful adaptability of these woods to the work. Spanish cedar is lighter and a little softer than mahogany, and as satisfactory in most other respects. It is sometimes difficult to distinguish between these woods in the boat, for they are of about the same color and grain. Some of our speediest boats are planked with Spanish cedar, and they are certainly the latest thing in boat building.

Mahogany is particularly adapted to planking because of its bright finish, its strength and durability, and by reason of its slow absorption of water. This is a point that must be considered in planking a boat. It is one reason why white pine is not a desirable wood. The latter will absorb water until its weight is increased almost to that of mahogany. Cypress is a lighter wood than white cedar, but as it absorbs more water than the latter, it will become heavier after the boat has been in the water a short time. Now, mahogany weighs considerably more than white cedar, but as it absorbs water very slowly it will in many cases be lighter than white cedar after a month in the water.

When we consider the selection of a wood for planking a boat we must, therefore, ask ourselves what water absorption possibilities it has. It is not sufficient to show that the wood is light out of the water. A very light weight wood that seems to answer all the requirements of planking may be almost worthless simply because of the tendency to absorb and retain a great percentage of moisture.

Oak does not absorb much water, but it is too heavy, and has a tendency to shrink more than almost any other wood when exposed to the sun and air. This naturally causes the seams to spread so that the caulking cotton will often drop out and it is difficult to keep the boat tight. The owner of an oak-planked boat will have to face this trouble continually. Parts of the boat that are always submerged may be built of oak, for shrinkage will not then occur. Consequently the garboard, or the plank next to the keel, is often made of oak to strengthen the weakest part of the hull. The keel and framework of the boat are generally of oak, for there is no wood superior to it for giving strength and rigidity to the hull.

The most expensive wood used in planking, and one that is employed on the best boats of the day, is teak wood. Teak is so hard that it will turn the edge of tools very fast, and it is almost indestructible. It absorbs very little water, and does not shrink. On account of its extreme hardness, the planking can be made very thin. It is both hard and heavy, but the latter objection can be overcome by making the planking thinner. It is the great expense of the wood and the cost of working it that prohibits its use for all except the wealthy. A teak planked motor boat will last as long as a man wants to run it, and its durability may make it economy in the end—that is, if one is sure that he wants the same boat for the rest of his natural life. To keep abreast of modern improvements and developments in motor boats, however, it is likely that a man will want a new boat about once in every three or four years, or more frequently. Consequently great durability is not the only factor to consider. One likes to keep in fashion in the matter of hulls as well as in engines and other equipment, and as we are constantly increasing the speed lines of our boats, most of us want to get a craft that will slide through the water a little faster every few years.

The question of the thickness of the planking is one that is being constantly agitated. Undoubtedly when the motor boat first made its appearance the planking was too thick. It was reasoned that the vibrations of the engine would shake and weaken an ordinary hull, and therefore very thick planking had to be used. Some of the early boats had planking up to ⅞ or 1 inch in thickness, and when made of oak the craft was so heavy in the water that it was like a log.

With the development of the speed boat marine architects went to the other extreme. They adopted planking so thin that the hulls were merely shells that would leak after a very short time in the water. Heavy engines placed in these boats shook and weakened the hulls so that they would all but collapse when under full speed. A safe and sane policy has now been adopted, making the planking suit the type of boat. If a very thin planking is used it must be of some hard wood, such as teak or mahogany, so that the hull will have sufficient strength. In the desire to get speed this rule is not by any means always adhered to, but the life of a hull built with ⅜-inch cedar or cypress planking is very short. Teak planking on the other hand has been successfully used as thin as ¼ inch, and the hull was strong and durable.

Not a little depends upon the method employed in putting on the planks. Planking less than half an inch thick cannot well be caulked, and it was necessary to devise a method to do away with caulking for speed boats using thin planking. In the seam batten system the planking is greatly strengthened by long battens which run from stem to stern and to which the planks are fastened by rivets or screws every few inches. By this method of strengthening, planking of quite ordinary wood may be used as thin as ¼ inch, and the boat is made tight and strong. As this calls for extra timber in the shape of battens, and the riveting is expensive, it is more costly than the ordinary way.

On cruising boats under 40 feet long, planking from ⅝ to ⅞ inches is usually adopted.

A method of double planking has been tried on some of the smaller semi-speed boats by using ¼-inch planking of light wood for both inside and outside skins. The inside planks are made of some cheap, light wood—pine, cedar or cypress—and the outside of mahogany or Spanish cedar. The oiled silk or canvas between the two planks prevents the inside timbers from absorbing much water, and consequently the actual weight of the planks after the boat has been in the water for some time is less than where ⅝-inch single planking of a more absorbent wood is used. The results obtained are very satisfactory, but the cost of the extra material and labor makes the hull far more expensive.

A method of double planking used on most of the smaller speed motor boats in France and Italy, and to some extent in this country, is to employ diagonal planking on the inside, with the planking running fore and aft on the outside. After the diagonal planks are put on, canvas or oiled silk is used to cover them, and then the outside planks are fastened to the stringers and inner planking. This makes the seams of the inner and outer planks run at different angles to each other. A remarkably tight hull can thus be obtained, and very thin planking can be used.

In designing a first-class, seaworthy motor boat, however, the first cost cannot always be considered the chief factor. One must build carefully and thoroughly to secure a good boat. A cheaply knocked together hull is never of much value. It will constantly give trouble, and the added expense of repeated caulking will in the end make it more expensive than a good hull. Not every prospective boat owner gives sufficient attention to this fact. In selecting a boat, the tendency is to get good lines and then to obtain as light and cheap a hull as possible. The result is disappointment and chagrin.

In nine cases out of ten the small motor boat is planked by what is called the carvel method of construction. Most amateur boat builders use this method, unless they adopt the clinker or lap strake method, which is not satisfactory for most boats. The clinker planking may be tighter in the seams than the other method, and the planks are less liable to shrink if out of the water for any time, but the appearance of the boat is not as pleasing. Most people want a smooth finish. The skin friction is increased in a clinker built boat and this practically eliminates speed boats from this method of construction.

(Continued on page 164)

Rigging the Tiller Leads

HOW TO LAY OUT YOUR STEERING GEAR TO GET THE BEST RESULTS WITH THE LEAST WEAR.

AS the safety of the motor boat at all times depends upon the strength of her steering gear, no part of her equipment is more important than this. Yet it is frequently given but little attention by the boat owner, and almost any kind of make-shift tiller ropes are in use. I have frequently seen tiller ropes so slack that there was almost a full turn of the wheel in lost motion, while chafed gear and patched tiller lines can be found on a large percentage of the boats used for pleasure.

There are many kinds of tiller cord on the market, from the common stamped brass chain, too light to bear the strain that is put upon it, to the best bronze wire tiller rope. In choosing transmission gear get the best possible, even at a slight additional expense. A braided cotton line with a core of bronze wire is about the best for the small boat, while for the large craft the regular bronze wire tiller rope is very satisfactory. The former of these now comes in a water-proof form which adds to its life.

Lay out your steering gear carefully, making the leads as direct as you can with as few turns as possible, as each turn or change of direction increases the friction and gives one more point at which the rope may chafe. Often the leads of the tiller rope are governed by the cabin or cockpit arrangement; which frequently results in a hard steering boat. Also have your lead as accessible as possible so that you can watch it for chafing and can get at it readily in case of breakdown in close quarters or in a seaway. When any part of a lead is inaccessible it seems as if a break always occurs at that part.

It will be found better to use a good sheave for the leads instead of the swivel block or galvanized pulley, which are frequently used. Be sure to get the sheave large enough so that the rope will not bind, and for the wire rope it should be as large as for manila rope of equal strength. Have as few of these sheaves as possible and try to get them where they can be reached for oiling, otherwise they are apt to become gummed or "frozen" and useless as a leader. If they have to be placed so that they cannot be reached it is well to use metaline bushings which will keep them lubricated.

In an open boat, or one with a cockpit, the tiller or quadrant is usually under the afterdeck and the lines are carried to each side of the boat and then forward under the cockpit coaming to the wheel. This usually necessitates two right-angle turns, one opposite the tiller and the other opposite the steering wheel, while the balance of the line leads straight. Brass eyes screwed into the wood make good fairleaders for holding the bight of the rope on a straight lead. Wherever a line goes through a bulkhead it should be protected by a brass thimble to prevent chafing. Care must also be taken to have the tiller ropes lead fair to and from the sheave blocks, for if they lead at an angle the rope will chafe badly and wear through quickly. For this reason the quarter sheaves have to be blocked up or down to bring them on the same level with the tiller or quadrant. (Fig. 2, blocked quarter sheave.)

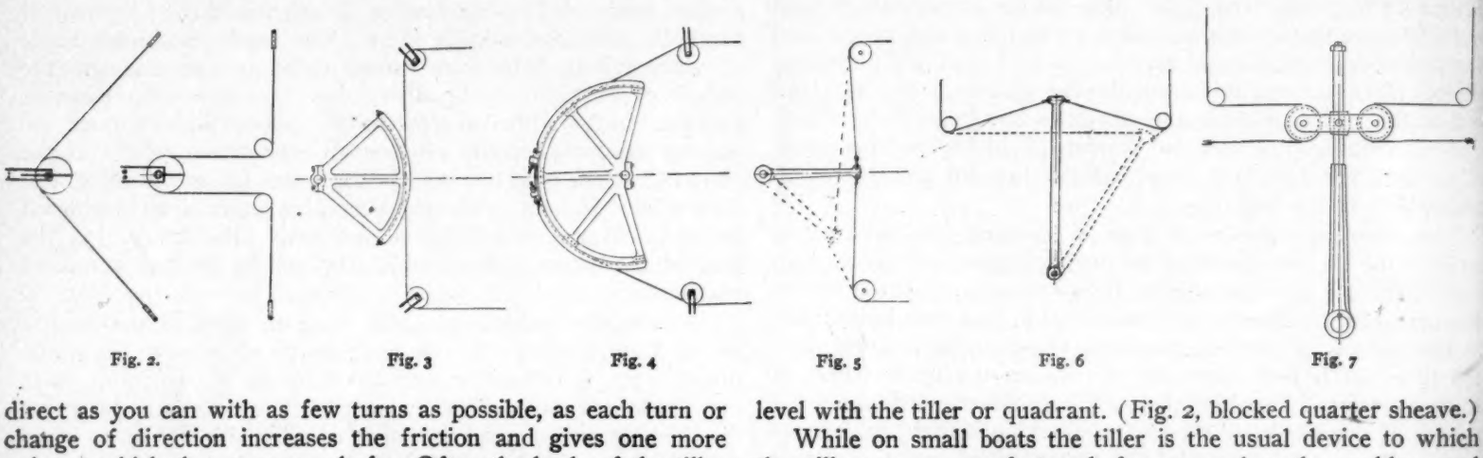


Fig. 2. Fig. 3 Fig. 4 Fig. 5 Fig. 6 Fig. 7

While on small boats the tiller is the usual device to which the tiller ropes are fastened for governing the rudder, and answers its purpose fairly well, yet a common tiller is apt to cause slackness in the tiller ropes, as can be readily seen by referring to Figs. 5 and 6. If the slack is all taken up when the tiller is amidships, when it is hard over there will naturally be considerable slack. This slack, however, can be eliminated by means of a movable sleeve which serves to keep the tension on the lines uniform as it slides up or down with the movement of the tiller. One form of this sleeve is shown in Fig. 7. If you are using a tiller, the quarter block leads should not be directly opposite the forward end of the tiller, but should be a little aft of same, so as

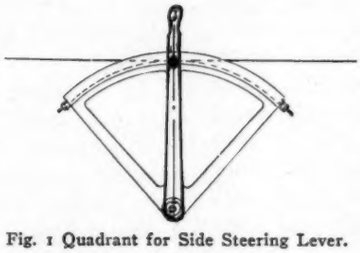


Fig. 1 Quadrant for Side Steering Lever.

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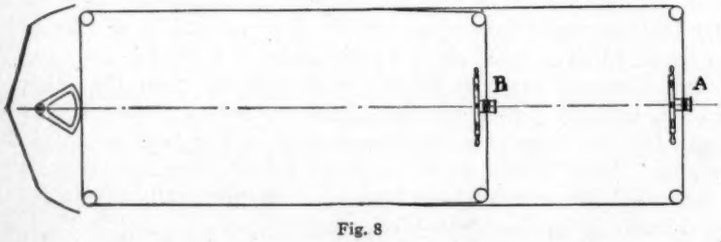


Fig. 8

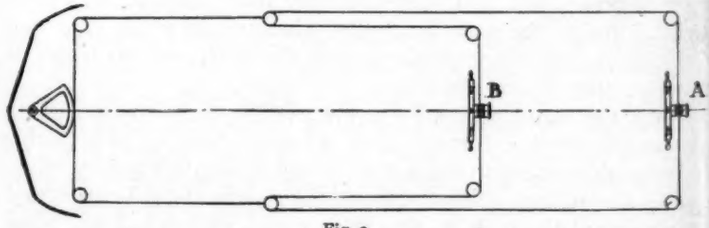
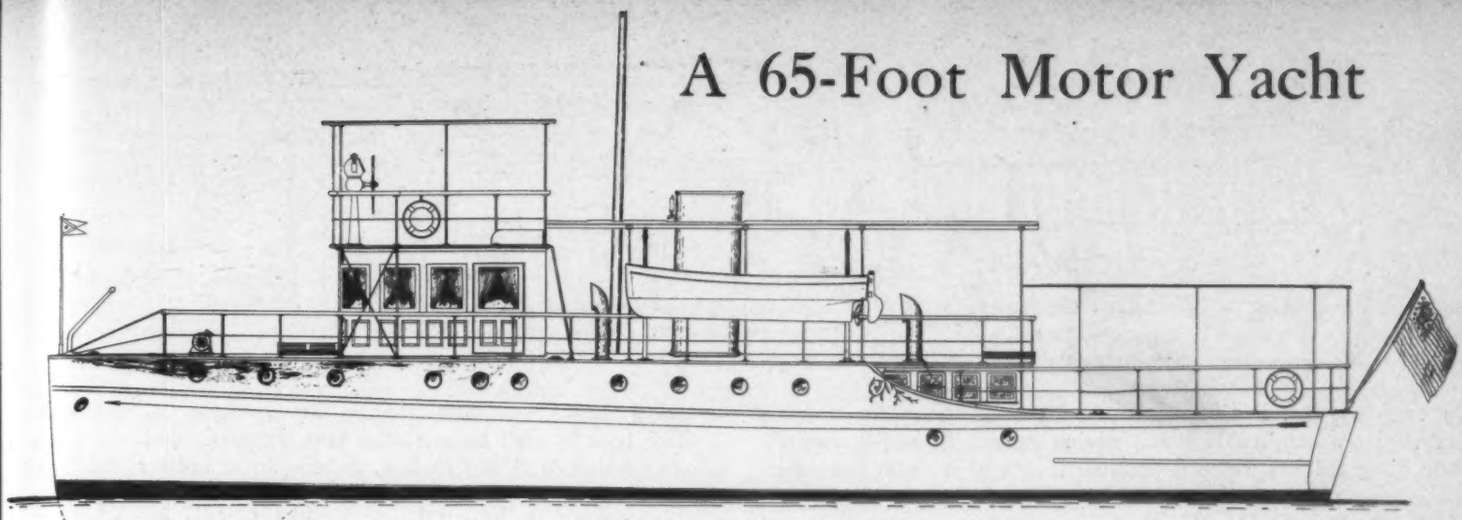


Fig. 9

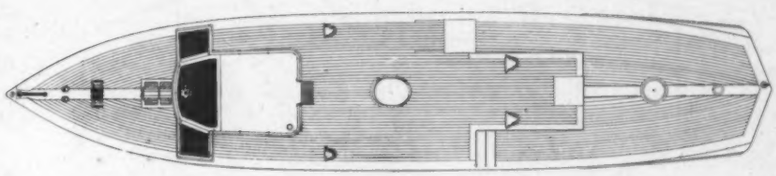
A 65-Foot Motor Yacht



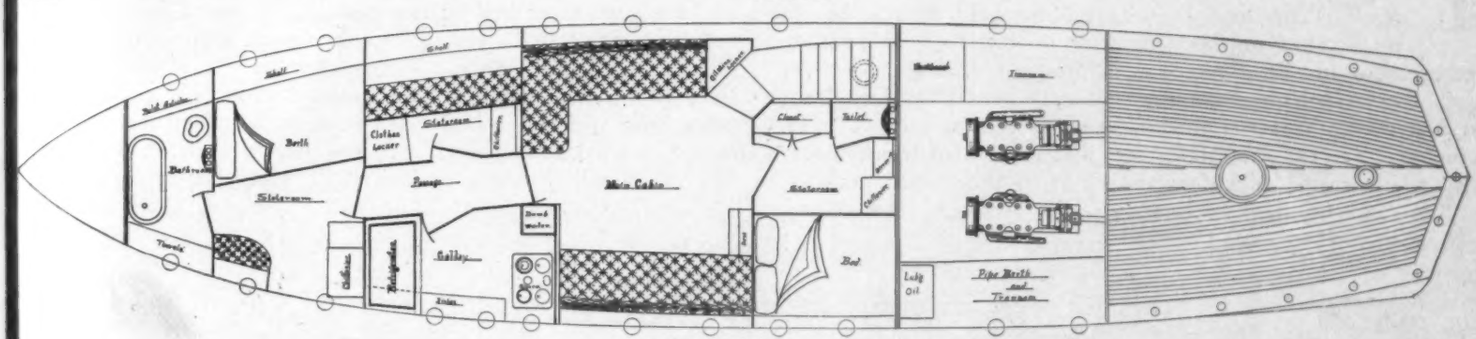
THE plans of the 65-foot power cruiser which we publish herewith are from the board of Mr. H. E. Dantzebecher, naval architect, of Philadelphia, Pa., for a yachtsman of that city.

The principal dimensions of the boat are: Length over all 65 feet; length load water line 62 feet 3 inches, extreme beam 13 feet 3 inches.

While she is of the conventional raised deck type, the striking thing about her is the unusual amount of accommodation below and the fact that she has a deck house on the raised deck with a navigating bridge on top of it. The great accommodation is obtained by placing the engines aft of amidships so as not to break the cabin space in the center, as is frequently done.



The interior layout shows a large main cabin with 10-foot transoms on either side, 3 staterooms, a bathroom and large galley. The engine room contains a pipe berth and transom for the crew. The engine room is separated from the cabin by a heavy bulkhead completely isolating the power plant and deadening the noise. She will be driven by two 35-H.P., 4-cylinder, 4-cycle motors, which will give her an estimated speed of 13 miles an hour. The gasolene tanks are located under the after deck. An innovation in the way of a safety appliance is the installation of a Pyrene fire extinguisher system working under a 100 pounds pressure that will operate automatically in case of fire. The adaption of this for boats is original with Mr. Dantzebecher.

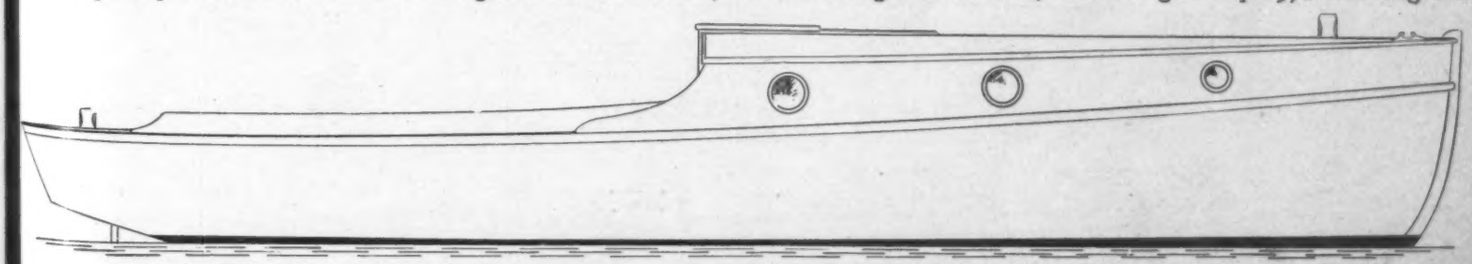


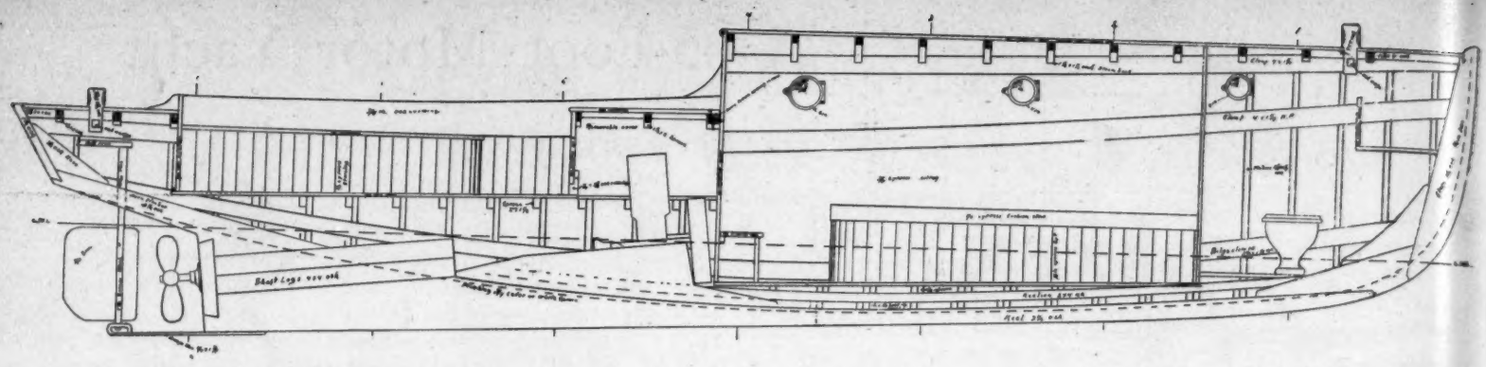
A 26-Foot Cruising Cabin Launch

THE plans of the little 26-foot cruising launch which we publish herewith are by R. J. Lane, of New Haven, Conn., for Mr. James Hill of Attleboro, Mass., and show a particularly roomy boat for one of her dimensions.

The principal measurements are: Length over all 26 feet, length water line 22 feet 6 inches, draft 2 feet. She is well built, with a 3½-inch oak keel, oak frame, hard pine keelson and clamps and cedar planking.

She is of the raised deck type, the cabin occupying about half the length of the boat, with a large cockpit 9½ feet long aft.

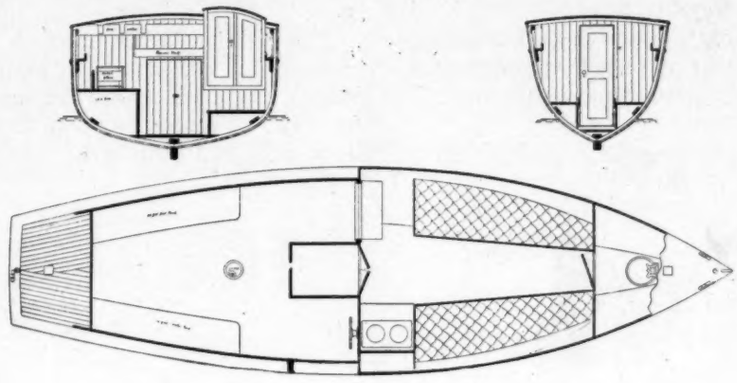




The engine is installed in the forward end of this cockpit and is covered by a removable hatch giving access from the cockpit, while hinged doors make it possible to get at it from the cabin. The engine plant consists of a 6-H.P. single cylinder Mianus motor which drives the craft at a speed of 8 miles an hour.

The sections show a full bodied, able boat with flat bilges, yet sharp enough forward to prevent pounding. The crown of the cabin house is not excessive, yet she had 4 feet 9 inches of head room inside. The cabin plan shows two transoms, stove space, toilet room and locker, and the compartment is lighted by three swinging ports on each side. The cockpit is self-bailing.

The boat is well built of the best material, with deck trimmings of oak, and she makes an able little cruiser for inland waters or along shore.



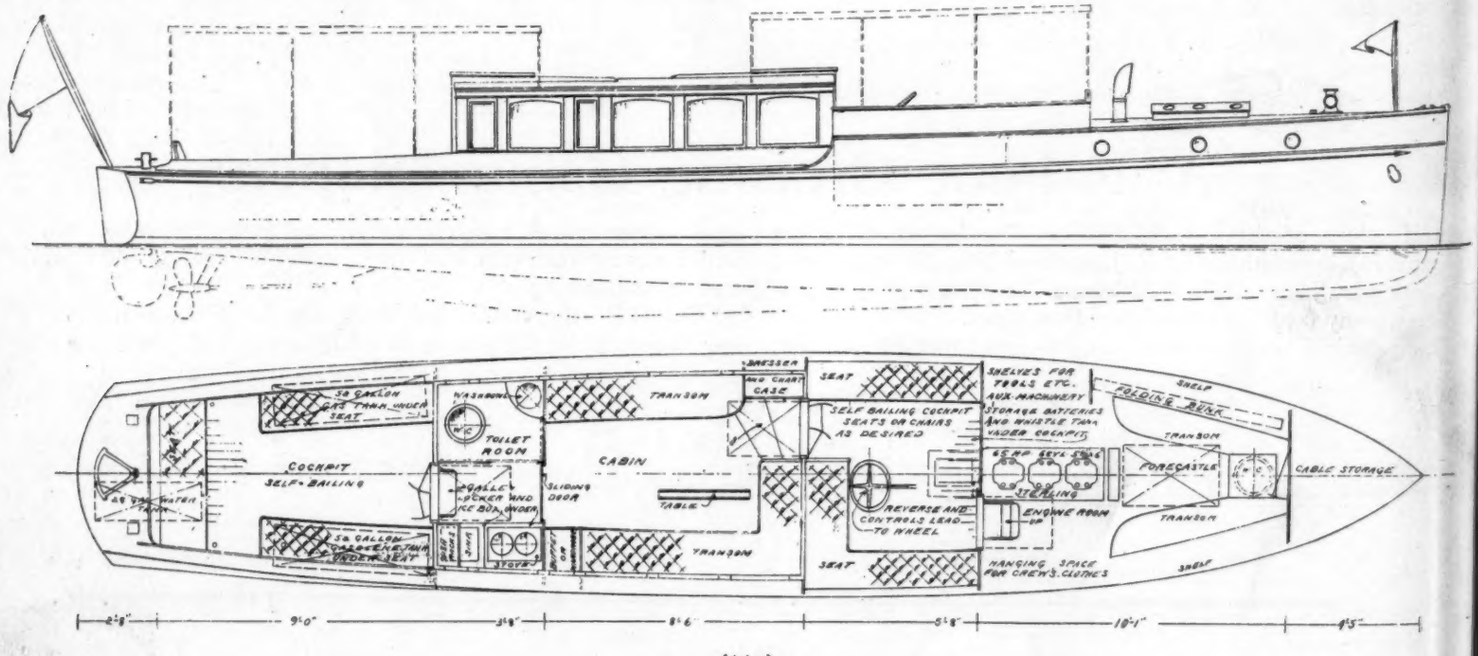
She is just the kind of a boat for knocking about and for fishing or shooting, yet with enough cabin accommodation for short cruises. The cockpit is large enough to hold a good sized party comfortably.

She has an overhanging transom stern, which is not often seen on power boats now-a-days, a graceful rounded stem and a clean, fair run, which should make her easy to steer in a seaway.

A 44-Foot Day Cruiser

THE plans of the 44-foot day cruiser from the board of Mr. R. E. Winslow, of Quincy, Mass., are interesting both on account of the popularity of this type of boat and because she embodies some new features in her design.

The principal dimensions are: Length overall 44 feet, length on waterline 43 feet 5 inches, beam 8 feet and draft 2 feet 6 inches. She has a straight stem and a rounded transom stern with a low raised deck forward. Aft of this raised deck is a glass-sided cabin house covering the main cabin, while farther aft is a good sized self bailing cockpit. A novel feature is the arrangement of her steering cockpit, which is amidships aft of the forward raised deck. This cockpit is depressed, with the sides of the raised deck and a coaming on top of it giving ample protection, while it contains transom seats sufficient to accommodate a good sized party. The engine is a 65-H. P. 6-cylinder, 5½ x 6-inch Sterling, which will give her an estimated



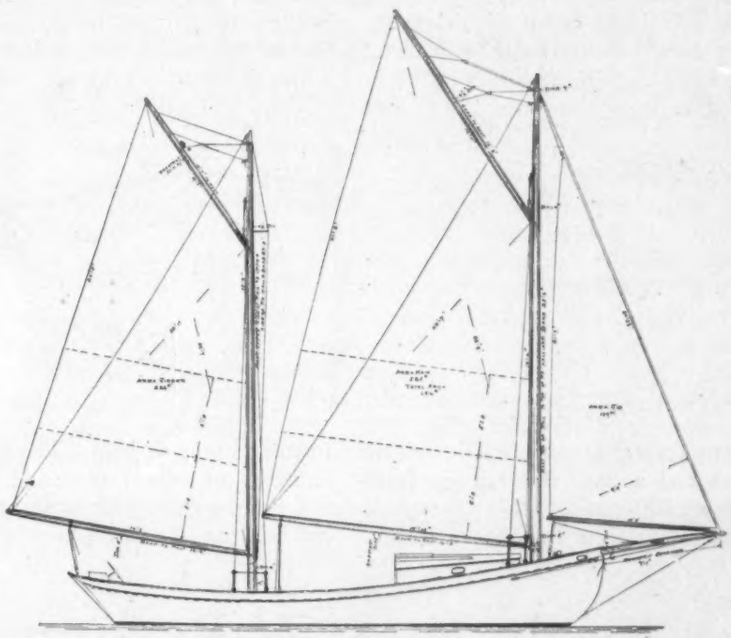
speed of about 17 miles an hour under favorable conditions.

The cabin is very comfortable for a day cruiser and has toilet room, galley and the usual fittings. The lines of the boat are sweet and clean and show that she should be easily driven, while her appearance is unusually handsome. She should make a good type for anyone wanting a boat for ferry purposes or daily runs.

A 32-Foot Fishing Ketch

IN these days when the gasolene engine is revolutionizing the fishing industry it is not often that one sees an out-and-out sail boat being built for fishing purposes; but J. G. Alden, the naval architect of Boston, Mass., has recently designed such a boat for use on the Great Lakes near Detroit for a man in the fishing business. The boat is rather remarkable in many ways and bears many unmistakable signs of the Gloucester fisherman.

Her principal dimensions are: length overall, 32 feet 6 inches; length, load water line, 27 feet 4 inches; beam extreme, 10 feet; draft, 5 feet 4 inches.



It was desired to have a boat that could stay out in all sorts of weather, until driven in by the ice, and she was designed with this purpose in view. She has extreme sheer with high freeboard forward, very short overhangs, with a rounded stem and long keel, transom stern and large displacement. The freeboard amidships is rather low, following the Gloucester idea. To give her good carrying capacity the cabin is forward and rather short, with just room for two berths, a Shipmate range and a couple of lockers. There is a square hatch amidships, while the main deck is broken just aft of the jigger mast making a sort of poop deck aft in which is also a cargo hatch. The vessel steers with a wheel, the wheel box being well aft. The ketch rig is easily handled and for this reason she was rigged in this way, there being no spar in her, barring the masts, over 16 feet long. The lines of the boat are fair and easy and she should be smart under sail, and particularly able in a seaway. She should be able to "lay to" very comfortably, and quite dry under these conditions for a boat of her size. The owner expects to compete against the gasolene fishing fleet, and while he may be able to do so whenever there is a breeze, it is probable that he will have to rely on his auxiliary power for use in the prevailing calms of summer. A yacht built on these lines with the cabin extending further aft to the jigger mast and a cockpit would make an excellent off-shore cruising boat, capable of going to Bermuda or anywhere along the Atlantic coast.

The total sail area of the boat is 656 square feet divided as follows: Main sail, 321 square feet; jigger, 226 square feet; jib, 109 square feet.

The main boom is 16 feet 2 inches in length, the gaff 15 feet 2 inches, jigger boom 14 feet 9 inches. She has quite a roomy after deck between the jigger-mast and the wheel box.

The boat will be heavily constructed, and while there will be no fancy material in her she will be built in the best manner throughout.

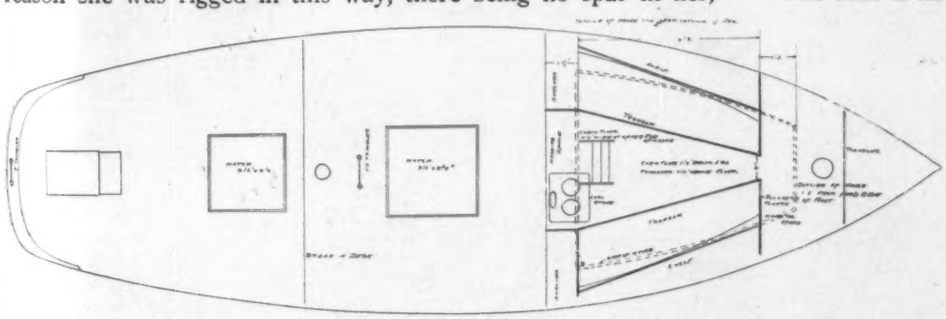
While it is not shown in the plans, a gasolene engine for auxiliary power will be installed well aft, where it will take up but little available room and where it can be reached through the after hatch. The propeller aperture will be made in the deadwood, which is wide enough to obviate cutting the rudder.

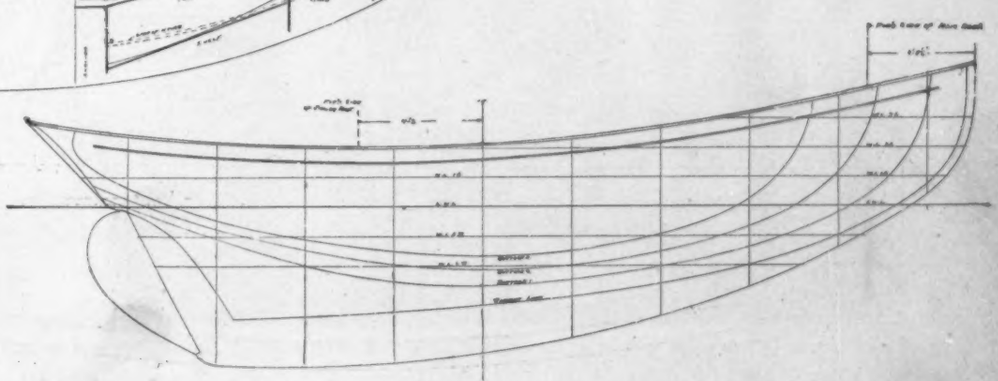
As the engine is designed purely for auxiliary purposes, but small power will be carried.

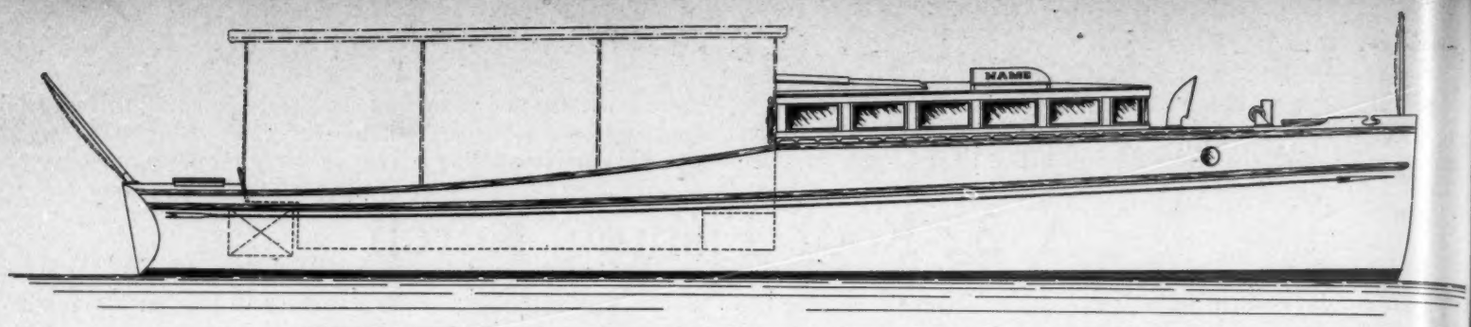
The cost of operation of such a boat will be very small, as she can be practically a single hander when desired.

The boat is now being built at Sandusky, Ohio, and it is expected that she will be ready to go overboard in the early spring, or as soon as the ice is out of the lake.

As is usual with working boats, all ballast will be inside.







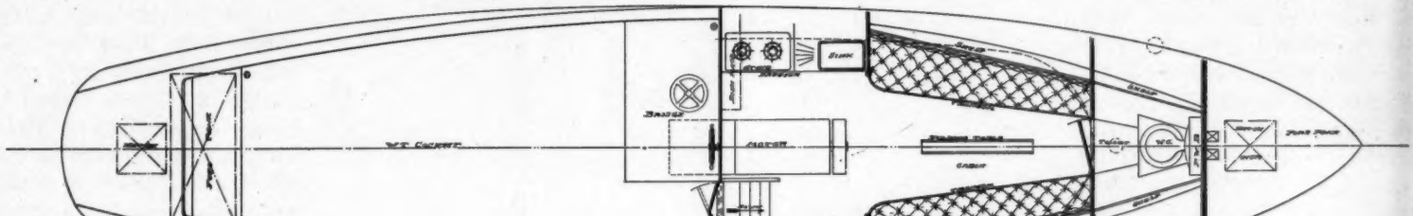
A 35-Foot Day Cruiser

AN unusually handsome and attractive craft is the 35-foot day cruiser designed by M. M. Whitaker, of New York, for a Binghamton, N. Y. yachtsman for use on the St. Lawrence River, the plans of which we publish herewith. The boat was designed to be a fairly fast day cruiser with good accommodations, and she fulfills admirably these requirements.

She is 35 feet long overall, 7 feet 6 inches beam, and has a draft of about 2′ 6″. She will have 4-cycle motor of 35-H.P.

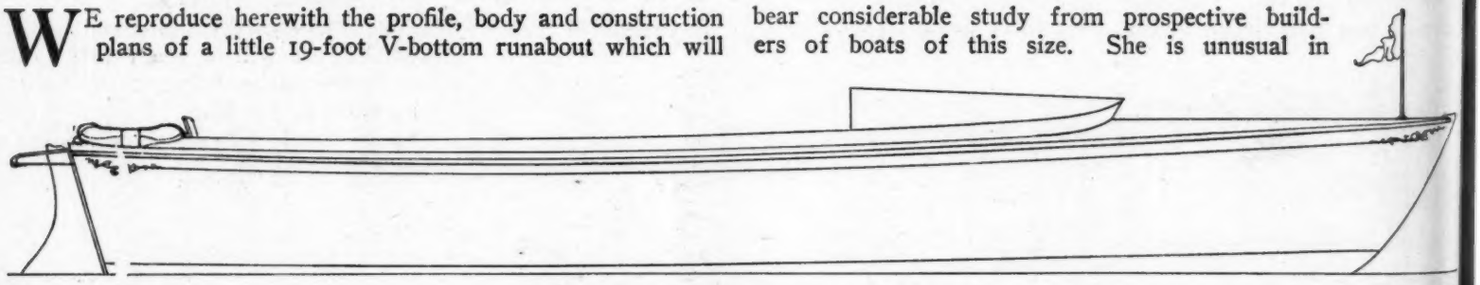
Her form is what has become known as the "Whitaker model," with good, flaring sections forward, considerable roll or tumblehome to the after sections and a dead rise bottom from end to end of the boat. She is a combination raised deck and trunk cabin craft, the cabin trunk rising from the forward deck. This gives a light cabin with 5 feet 6 inches of head room without spoiling the profile of the boat. All the windows of the cabin trunk are made to lift up and swing in, insuring good ventilation. The cabin contains two transoms and a folding table, toilet room, ice chest, large locker and galley space, the motor being located in the after part of the cabin amidships. The cockpit is left free for wicker chairs with a lazy back seat at the after end under which is the fuel tank.

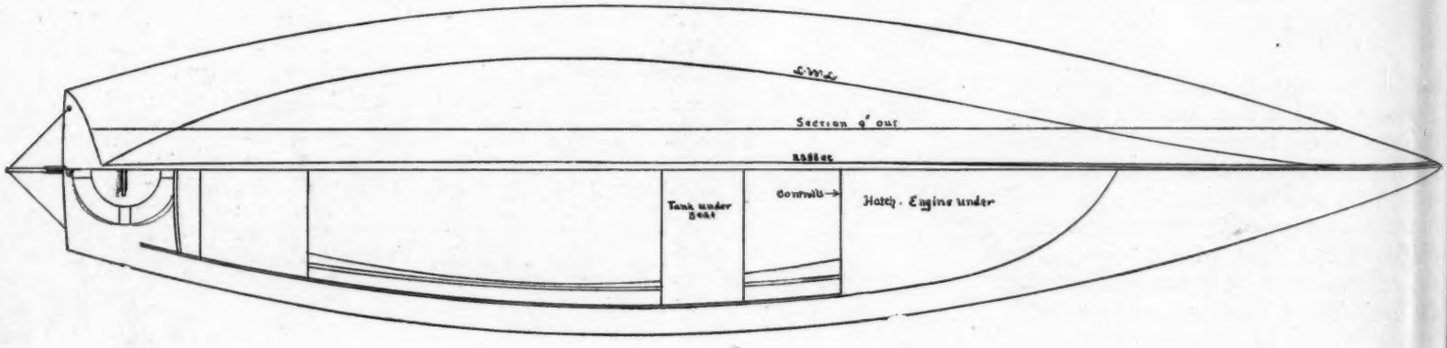
The hull will be as light as is consistent with strength in this form and type of boat. The framing will, of course, be oak with stringers of yellow pine and cedar planking. The cabin house and interior trim will be in mahogany and the bulkheads, doors, ceiling, etc., in white enamel.

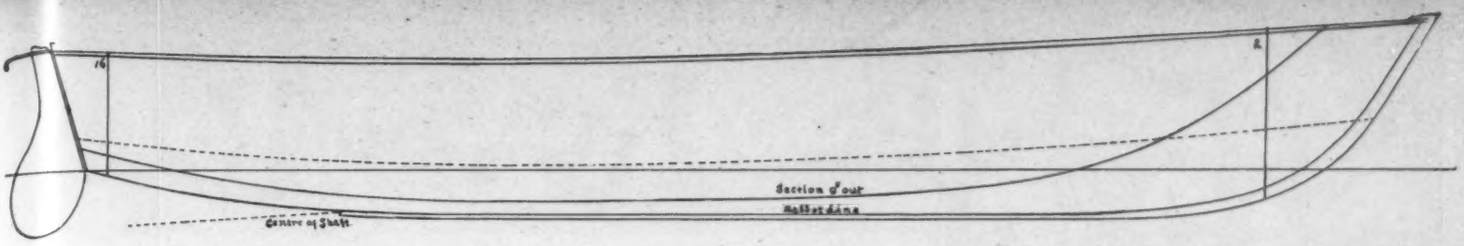


A 19-Foot Easily Built V-Bottom Runabout

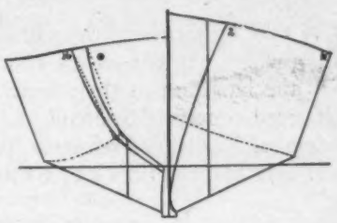
WE reproduce herewith the profile, body and construction plans of a little 19-foot V-bottom runabout which will bear considerable study from prospective builders of boats of this size. She is unusual in







a great many ways and has a number of good points to recommend her. The boat was designed by Mr. J. L. Foster of Orcas, Washington, and has the following dimensions: Length overall 19 feet 1 inch; length waterline 16 feet 9 inches; extreme beam 4 feet 4 inches, beam at waterline 3 feet; normal draft of hull 9 inches; freeboard at bow 2 feet 1½ inches, freeboard at stern 1 foot 7½ inches and least freeboard 1 foot 5½ inches.



The designer claims that the boat is a good rough water model, easy and dry in a seaway, with a sharp entrance and good flare, so that she will not be checked by a head sea. The run is sharp, there being no flat counter, so that the bow will rise quickly and she should not pound or spank in a slop of sea. The wide flare gives great reserve buoyancy, letting her down gently and throwing the spray downward instead of over the boat. She should be easily driven with small power and the designer estimates that 2½ H.P. will give her about 10 miles and 8 H.P. about 15 miles.

The First St. Louis Motor Boat Show

THE Central Western States have at last come into their own with the inauguration of a motor boat show at St. Louis which promises to become one of the big annual fixtures of the motor boat world. The honor was also theirs of holding the first show of the season—in fact, they got such a drop on the other show committees that the show was not held this season at all, the dates being December 11 to 16, 1911, and the place, the Coliseum at St. Louis, Mo.

This is also the first time that such a large show has been held under the auspices of a simon-pure power boat association instead of an association of boat and engine manufacturers, and great credit is due the officials of the Mississippi Valley Power Boat Association for the way their first show was handled. An unusually large list of exhibits was secured and the Western motor boat bugs (there is an awful swarm of them), had an opportunity to get the first look at the new models in boats and engines for 1912.

The Coliseum was beautifully decorated and the center of the great floor was covered with the most interesting lot of boats that has ever been collected west of Chicago. In the middle of the building were two large cabin cruisers, one a 45-footer built by the Sparks Boat and Engine Co. of Alton, Ill., which proved to be one of the chief attractions of the show, and the other the raised deck cruiser Wigwam, of the Valley Boat & Engine Co., equipped with a complete wireless outfit. The same company also exhibited two attractive runabouts.

The first exhibit to be seen on entering the building was that

(Continued on page 160)

GENERAL VIEW OF MOTOR BOAT SHOW HELD AT ST. LOUIS UNDER AUSPICES OF MISSISSIPPI VALLEY POWER BOAT ASS'N.

Mess Room Talk

IN this Department we will answer questions concerning the problems which boat owners are constantly running up against in the operation of their motors or the handling of their boats. Theoretical as well as practical questions will be answered promptly by mail, and when of sufficient interest, will be printed for the benefit of YACHTING readers. This service is free. Don't hesitate to make use of it. Address, Information Department, YACHTING, 141 W. 36th St., New York City.

Glass Gauge for Gasolene Supply.

Phila., Pa., Dec. 15, 1911.

The matter of measurement of gasolene in the supply tank particularly interests me, and I have been trying to find some way to solve this problem in my motor boat, as I have frequently and unexpectedly (as is usually the case) found myself stranded by the supply giving out. I am wondering if I could place a glass water gauge in face of tank which is located under the bow with bulkhead opening into cockpit. I could then at any time see the level of gasolene in tank, but the probability of not being able to make a tight joint around the glass tubing seems to be one of the objections, though I think this could be overcome. I am not familiar with any indicators that would answer my purpose as well as this. What do you think about it? R. M. H.

A glass water gauge used as a gasolene tank indicator would be hard to read and would have to be observed very closely on account of the thinness and transparency of gasolene; but if it can be run out on the bulkhead and placed near the operator I think your suggestion is a good one. I do not believe you will have any particular difficulty in securing a tight joint, as the pipe connections may be such as are used in the main fuel line. The joint around the glass tubing could easily be made tight by using a washer on which the lower end of the tubing is firmly pressed. This would last for a time, but I believe the main difficulty would be found in obtaining a packing that will not deteriorate under the action of gasolene.

There are, however, a number of mechanical indicators which may be set in any convenient place and which positively record by means of a pointer or dial the height of the fuel in the tank. These gauges are dependable and reliable. They can be obtained from any of the larger marine supply houses that advertise in YACHTING.

Use of Coil and Current Consumption on Motor with One-Cylinder Cut Out.

Poughkeepsie, N. Y.

I would like to ask your advice in regard to my engine. It is a 2-cylinder motor, and one of the cylinders being broken, I have cut it out and been running it on one cylinder alone.

I have an L——— 2-cyl. box coil (vibrator), which uses 6 dry cells. Could I get a smaller coil or one that would work with fewer batteries? This one uses up batteries very fast. Thank you for your advice.

C. W. M.

Replying to your inquiry, if your engine has two cylinders, only one of which is in use, it is only necessary for you to use one unit of your two-cylinder coil. A single-cylinder motor should be able to be run on four or five batteries, but six will, as a rule, give the best results. It is evident that the cause of the excessive current consumption lies more with the adjustment of the coil than in its construction, and I would advise you to try loosening the vibrator set screw and vibrator tension as much as possible and still maintain the decided, one-tone buzz from the coil. The vibrator should set within an eighth of an inch of the coil core and should move away from the contact points easily. A "stiff" coil consumes more current than will a 6-cylinder engine, properly adjusted.

Power in Canoes.

Mendon, Mo.

Noting your offer to answer questions in YACHTING, I would like to know if a birch bark canoe would be strong enough to carry a Waterman KI. 2-H. P. motor satisfactorily? Also, could a Waterman "Porto" motor or KI motor be used in an Acme folding canvas boat with good results? J. H. L.

No gasolene motor is adapted for use in a birch bark or canvas boat, as it would not be long before the entire craft would be shaken to pieces. Even the smallest motor will shake and vibrate excessively unless it is secured to a substantial foundation, and this bed cannot be laid unless the boat is strong enough to support it easily. It is to be understood that a birch bark or a canvas craft would be able to withstand the added weight of the power plant, but there would not be sufficient timber used in its construction to admit of the use of a substantial foundation.

The Waterman Co., however, make a power canoe which gives good satisfaction and is fast, easily driven and buoyant. This canoe is canvas covered, the canvas being stretched over the regular canoe construction. This company also make bed pieces and shaft log to fit any canvas-covered canoes built on conventinal lines. There are also a number of other power canoes on the market.

A Steel Boat for Inland Waters.

Clinton, Iowa, Dec. 28, 1911.

I am thinking of buying a 16 or 18-foot open motor boat this spring and it's a question in my mind which would be the better—a steel or wooden boat. We have no steel launches here on the river, so have nothing to go by for a comparison except the catalogues of the makers.

From your experience and observations would you buy a steel boat for your own use if you were going to use it on a river where heavy water is no consideration?

Do you think the steel boat is as neat and natty and altogether as handsome as the up to date wooden boat?

Thanking you for any information you can give me along this line, I am, Yours truly, W. B. L.

Having looked into the subject thoroughly, and after an experience with two steel boats extending over five or six seasons, I believe I can conscientiously recommend the steel boat as giving absolute satisfaction, especially in sheltered waters. The care required by a steel boat is no more than that which should be devoted to a wooden hull, and the former cannot become waterlogged and is guaranteed to be puncture proof. If a man desires a "ready-made" boat, one of these steel launches should give good satisfaction, if used in the kind of water for which it is designed.

There are a number of reliable firms which manufacture steel boats who can be depended upon to fulfill the claims they make for their product. There is one steel boat now on the market made by a new method of construction that possesses a number of advantages. This craft is made with only four or five parts or pieces of metal.

Concerning the looks of the steel boat, most of them are built in stock models, and if the model is right the boat can be as handsome if made in steel as in wood. Some of the models to which they are built are shallow, with little sheer or freeboard, and are intended for smooth water. But there are several good model 18-footers and up, on the market.

Propeller Pitch for an 18-Footer.

Marietta, Ohio, December 30, 1911.

I have a Mullins steel hull, 18-foot boat, with a Roberts 2-cylinder, 6 H.P. engine, which gives me a speed of about 7 miles per hour. But I think I am losing both power and speed because I am swinging a 3-blade, 12 inch propeller of about 18-inch pitch and the engine runs so fast that it simply churns the water and doesn't take a hold as I think it should. I would put on a larger propeller but I have not the room between the shaft and boat. The only thing I know is to change the pitch of the propeller. Can you advise me as to what pitch of propeller to put on so that the engine will be slowed down some and take hold better. O. R. C.

The Roberts motor as used in the Mullins model should, I believe, run at a speed of about 800 r. p. m., and I would advise you to make sure that it is exceeding this number of revolutions per minute by means of

a speed indicator before considering a change in the pitch of the wheel. A 3-blade, 12-inch propeller is certainly large enough for a motor of this size, but it is impossible to advise exactly as to the proper pitch without knowing the characteristics of that individual engine. If it is found that the r. p. m. of the motor are above normal, the wheel should be removed and the blades bent slightly to give a greater pitch, in the manner explained in this department last month, but care should be taken not to bend them too much, so that the motor will be held down to an inefficient speed.

A Proper Tool Kit.

Too much emphasis cannot be placed on the necessity of motor boat owners seeing that they have a proper outfit of tools aboard to do any necessary or emergency repairs on their engine. It's scandalous the way some men worry through a season with a tool locker that would shame a landlubber. Providence can do a whole lot for fools, but it can't take a carburetor apart or overhaul a circulating pump. Repair bills would be cut in half if engineer-owners with a turn for mechanics had a tool kit aboard that would allow them to do the work themselves.

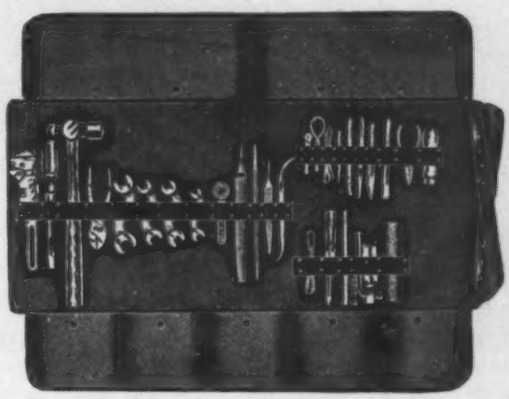
An efficient kit should include the following tools as absolutely necessary: a 9 to 10-inch auto-wrench; a good 10 to 14-inch Stillson pipe wrench; two screwdrivers (one large and one small); one 10 to 12-oz. ball pien hammer; one 6-inch combination pliers, forged steel; a set of

An off-set ratchet screw driver made with adjustable wrench sockets. The screwdriver is detachable.

forged S wrenches to fit the various sized nuts and cap screws on the motor; an 8 or 10 inch half round file; a 5-inch smooth file for coil points, etc., one cotter pin extractor; one flat nose plier; one 3/8-inch cold chisel, hand forged; and one key seating chisel.

In addition to these necessities a good kit should contain an offset ratchet screwdriver for getting at screw heads in places inaccessible to a straight screwdriver, the ratchet being an important feature where there is little space for the "throw." These ratchet screwdrivers also have wrench sockets that can be fitted, making any nut or cap screw on the engine accessible. This will be found a very handy tool. A spark plug socket wrench is a useful tool, as is a spark plug brush, steel and bristle. A 6-inch pipe wrench for the smaller pipes will also come in handy, as will a bearing scraper, and a round machinists' punch. A roll of sand and emery paper as well as one of asbestos packing should also be carried. There should also be enough copper wire on board for repairing connections, emergency use, etc.

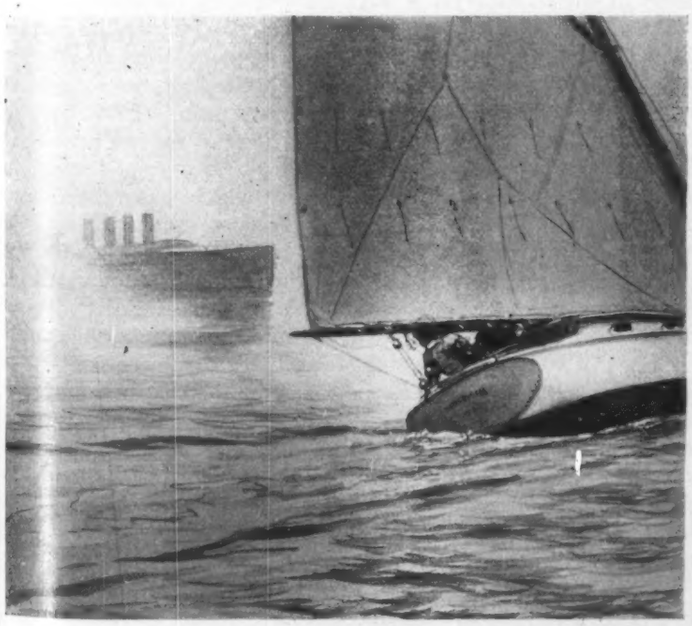
Not only should there be a proper outfit of tools on board, but they should be taken care of. In a cabin boat where there is a regular tool locker they can be hung in sockets on the bulkhead or a door and a place made for every tool, where it should be put immediately upon completion of the work. If in an open boat, a tool bag or case of heavy brown canvas with a strap for holding the tools should be provided. The illustration herewith shows a very handy tool case or kit. This case can be rolled up and kept in a locker that can be fastened with a padlock or



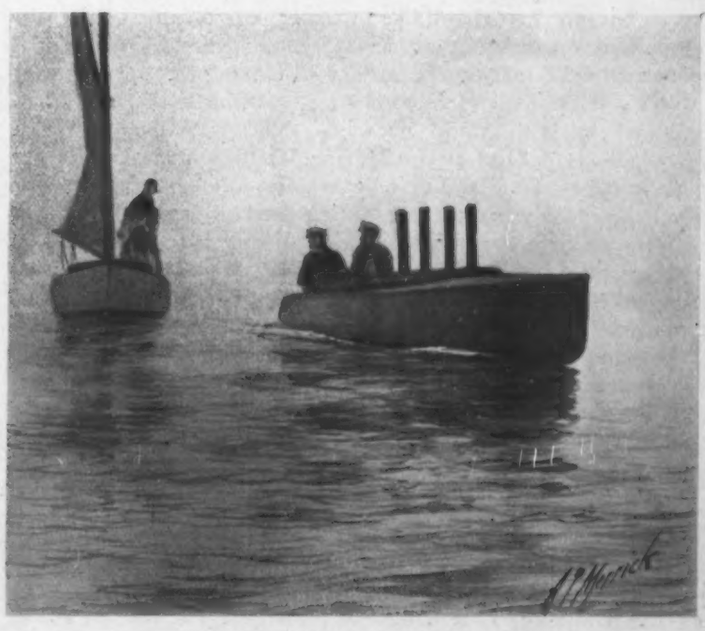
Get a case for your tools and keep them in it instead of scattered all over the boat where you cannot find them.

combination lock. Keep your tools well oiled or greased to keep the rust out. Salt water plays the devil with all steel tools. If your boat is large enough to have a little work bench with a hand vise attached you will find that your work can be done much more easily and you will be surprised how much you can do yourself that you formerly paid your good money to an "expert" to do.

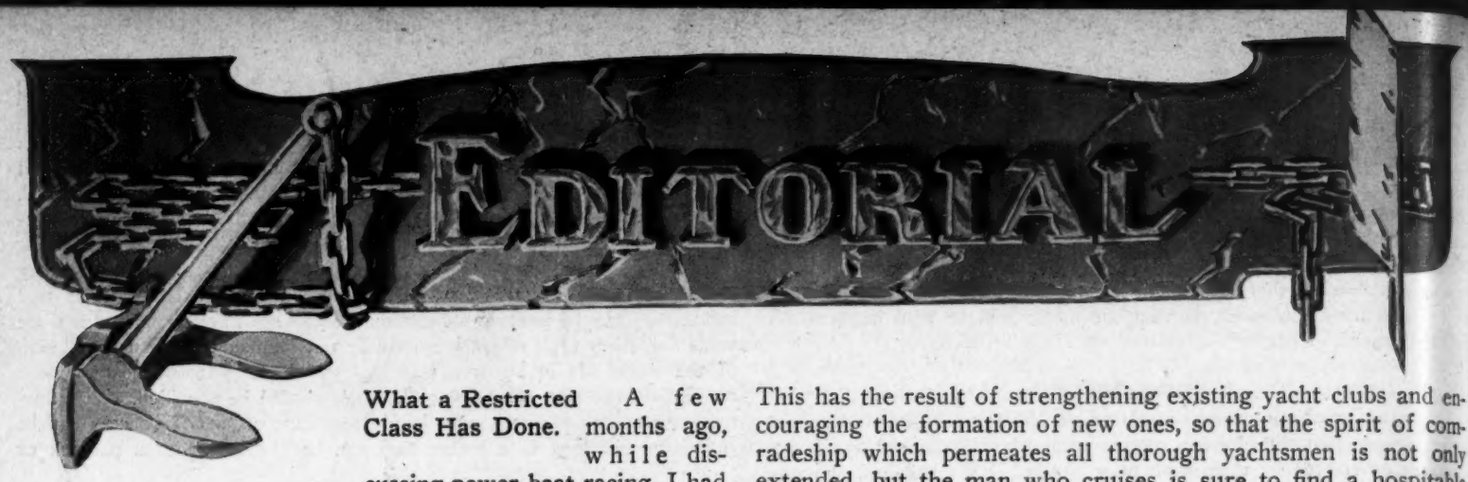
In addition you will find that you will have much more use out of your boat, as you can do the work more quickly and will not be dependent upon the time of machine shop employees, and the delays consequent upon getting to a repair plant and back again.



HARD DOWN! QUICK! HERE IS THE MAURETANIA RIGHT ON TOP OF US.



WHAT ARE YOU FELLOWS SO SCARED ABOUT? WE WOULDN'T RUN YOU DOWN.



What a Restricted Class Has Done. A few months ago, while discussing power boat racing, I had occasion to speak of the promise which a reasonably restricted class of small racing power boats seemed to offer. To the best of my knowledge no restricted class of power boats in the proper sense of the term has been tried out by the boating associations of this country. One-design classes have been attempted, though the trial was hardly conclusive. The trouble has been that defined classes, either one-design or restricted, have not held the interest more than a few seasons and have speedily fallen into "innocuous desuetude" to quote the last democratic president. If wisely chosen, however, this should not be the case.

The little 21-foot restricted class of the British Motor Boat Club has done so much for racing in England the last two years, and promises so much for the coming season, with six new boats already under construction for the class and more in sight, that it might be well to see wherein lies its popularity.

First, the boats are of a size easily within the means of the average man to build and maintain, and they can be operated by the owner without the services of a paid engineer if desired. Racing is provided weekly throughout the season and the class is recognized at all the large race meets. The restrictions are fair and not too onerous, allowing enough latitude to designer, engine builder and owner to develop any ideas they may have and, lastly, the racing is keen and the boats are kept on a parity by a fixed handicap against the winning boat.

The boats must not be over 21 feet in length, with not less than 3 feet 9 inches beam. Some of the other restrictions are: Motor—To be an internal combustion engine of British manufacture; any number of cylinders allowed, provided the total piston displacement does not exceed 151 cubic inches and the stroke does not exceed 6 inches. Scantlings—Planking throughout to be of wood not less than ¼ inch finished, two-thirds of the boat to be decked in with wood not less than 3-16 inch finished. Hydroplanes as defined by the Marine Motor Association are not eligible in the class. Fixed Handicap—The following fixed handicap will be enforced in the succeeding race or races: 8 secs. per knot for winning a first prize; 4 secs. per knot for winning a second prize and 2 secs. per knot for winning a third prize. A nonstarter will be penalized 5 secs. per knot. These penalties to be cumulative.

The handicap system works evenly and automatically against every boat, giving each a chance to win, and is fixed so that each owner knows where he stands at all times. It would be a good move to try out such a class in this country if one of the larger power boat associations would take it up.

The Season's Outlook. "Spunyarn tells which way the wind blows," and if signs count for anything this early in the year the coming yachting season promises much for those who take to the water for pleasure. The fleet of power and sailing yachts is constantly growing, and green hands are rapidly being added to the ever growing list of A. B.'s and M. E.'s. This has the result of strengthening existing yacht clubs and encouraging the formation of new ones, so that the spirit of comradeship which permeates all thorough yachtsmen is not only extended, but the man who cruises is sure to find a hospitable welcome at an ever growing number of points. And one of the gratifying signs is that the man who owns a small boat and sails her himself is getting the recognition he deserves, and club fleets are increasing with boats of this size at the expense of the larger craft.

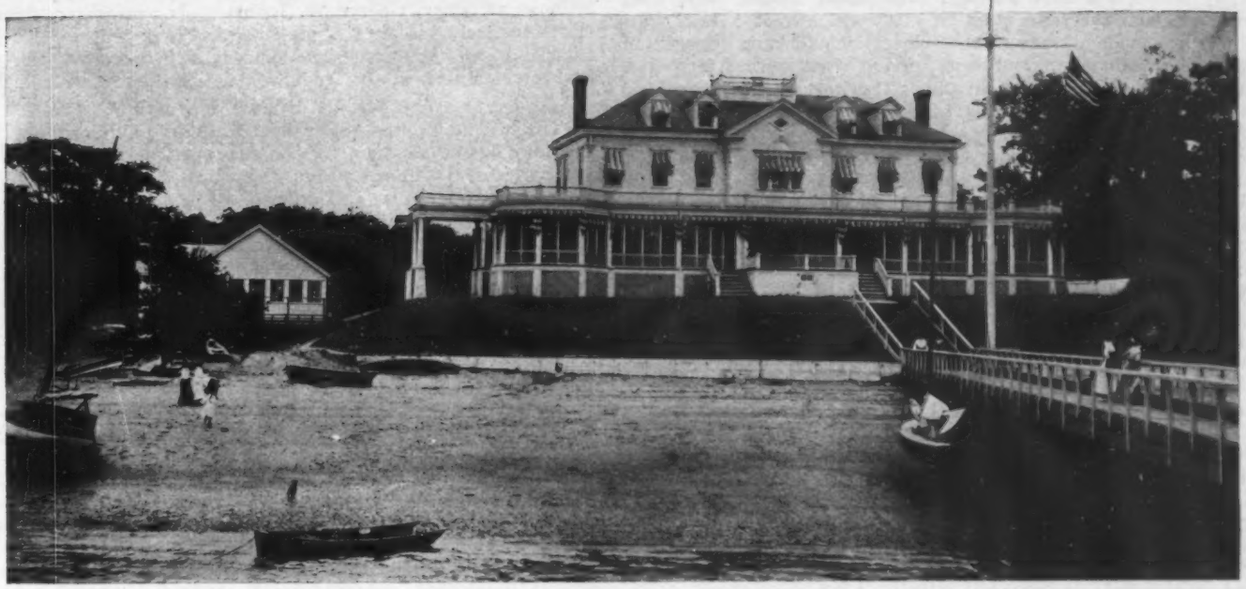
The tendency of the last few years has been toward a better and safer type of boat, particularly among the power craft, where a great improvement is seen over the type of boat which was turned out four or five years ago. Boats are being designed for a special purpose and the power is applied intelligently and with greater thought to its reliability and conservation. The men who took to the water through the advent of the power boat are learning more about boats and engines, are venturing farther from home and are getting better boats, which results in a healthier state of the sport in general.

Lots of New Boats The foregoing brings us to a consideration of the building outlook. Up to December there was very little being done in the way of new craft, but since that time the yards, especially the larger ones, show a gratifying increase in the number of boats which they have under construction. Most of the boats are power driven craft, and the majority of these are cruisers, which shows what a hold this branch of the sport has on those who go to sea for pleasure. I am also surprised at the number of large power cruisers that are being built this year, there being many between 75 and 120 feet in length, all of the larger yards reporting some of this size. Some of the smaller yards have not yet filled up with work, but in the case of smaller boats most prospective builders have a pernicious habit of waiting until the last possible moment before placing their order, and it is usually well after the first of the year before builders are asked to bid on the smaller craft.

The outlook for new sailing craft, however, is not as satisfactory, but this is largely due to the controversy over a clause in the universal rule relating to measurement which was raised by the protest in the Manhasset Bay Cup Race last summer. Until this is cleared up there will probably be but little building of sailing craft. There are, however, a gratifying number of the small one-design classes under construction. A number of clubs will have new classes this year which will do much to stimulate interest in racing. In spite of the wonderful growth of power boats of all kinds the sailing fleet is showing a healthy increase and more men are racing sailing craft today than ever before in the history of American yachting. These sailing men are all using power in some form, either in power dinghys or large yachts as tenders for their sailing craft, and engine builders will do well not to lose sight of this fact, some of their very best patrons being owners of racing sail boats.

With the advent of the two big Eastern motor boat shows the prospective buyers will be able to see the latest improvements in boats and engines for the year, and from then on there should be a gratifying demand for new equipment.

Driftwood From Along Shore



A. Cary Smith, the Father of American Yacht Designing

It is at least worthy of passing note that the death of A. Cary Smith, which occurred on December 8th, was preceded by only about ten days by the death of W. W. Bates, an old-time ship builder and a friend and instructor of his, some twenty years ago Commissioner of Navigation.

Mr. Smith's life work was begun as an apprentice in boat-building, about 1854, nearly a quarter of a century before anything like the systematic designing of yachts or other vessels was known in this country. At that time, and for many years later, the block model and rule o'thumb methods were paramount in both large and small yards. The more noted yacht builders, with the notable exception of D. J. Lawlor and possibly one or two more, had only an elemental knowledge of ordinary ship drafting and the use of plans, while even the most skilful boat builders knew only enough of drafting to enable them to make all the full size moulds from the miniature block model.

Mr. Smith's mentor and guide, Captain Bob Fish, was a genius in his way, untaught, but with an intimate knowledge of yachts and boats backed by hard practical common sense and those inborn perceptions which make a man a boat sailor. Working in crude ways of his own he obtained results which have kept his name alive today when many of his contemporaries are forgotten. Under him, Mr. Smith learned the trade of boat building as it was then practiced and also how to put a boat into condition and how to sail her to win in a race.

In the spring of 1851, as a boy of 14, Mr. Smith was taken by his father to the shipyard on the East River where the yacht America was building; this may be taken as the starting point in a career which has just culminated after sixty years devoted to the production of many classes of vessels.

Cary Smith's first step away from the trade of the boat builder to something higher was made about the end of his apprenticeship; probably prior to 1860, when Mr. Smith paid to Mr. Bates the sum of twenty-five dollars for a course of instruction in ship drafting, the knowledge of the three plans, and how to construct them and to lay them down full size on the mould loft floor.

In view of the many interesting phases of Mr. Smith's long work in yachting and the influence which he has had on the sport, it seems most regretable that the notices of his death have been marked mainly by gross inaccuracies and glaring omissions; his vessels, from the little yacht Comet of the early sixties down to the Peck, Chapin and Lowell and other large commercial vessels of today bridge the great gap between the old-time shipwrights and master-builders such as George Steers and William H. Webb and the modern naval architect.

In his death, America loses a designer that always stood for the best that there was in his art, and for fairness in his dealings with others, whether it was in the heat of a closely fought race or in his profession; and those who were privileged to know him lose a staunch friend whose memories of old days, old yachts and those who sailed them were an unfailing source of delight.

W. P. Stephens.

Hudson River Motor Boat Club

The Third Annual Dinner of the Hudson River Motor Boat Club took place Dec. 9th, at the Geneva Club, 235 West 43rd Street, N. Y. It was preceded by a meeting at which the following officers were elected for the ensuing year: Commodore Spetland; Vice-Commodore H. Alex. Johnson; Rear-Commodore Wm. Israel; Corresponding Secretary, Frank Pratt; Financial Secretary, Arthur Haas; Recording Secretary, Wm. Stewart; Treasurer, J. Gasser; Governors, F. D. Gheen and Geo. Vestner.

Mr. Wm. Brady, American delegate to the International Athletic League acted as toastmaster. Perhaps the happiest remark made among the various responses was that by Vice-Commodore Johnson when he said that the success could be largely attributed to the sportsmanlike character of those members who were as willing to race for a broom as for the valuable prizes now exhibited on the table.

Here he referred to the Kitsix which won the broom from him and which trophy is among Frank Gheen's most valued possessions. At the same time he offered a cup to be presented as a prize for an open race around Manhattan Island, all other conditions to be left to the Regatta Committee. Mr. Mortimer Israel on behalf of his father, the newly elected Rear-Commodore, also offered a cup to be competed for under rules laid down by the club, the only condition being that it should be open to members of all recognized motor boat and yacht clubs. Then our genial and well beloved Steward, Captain Aleck Simpson stirred up wild enthusiasm by offering three cups for three short races and attaching no conditions whatever.

The award of twenty-five prizes by Capt. Pratt of the Regatta Committee, to the winners of the past season completed the evening's exercises.

Officers of Williamsburgh Yacht Club

The election of officers of the Williamsburgh Yacht Club for the year 1912 was duly made at the regular meeting of the Club for December, and were: Commodore, John G. Wilson, re-elected; Vice-Commodore, A. Kling; Rear-Commodore, N. Bock; Treasurer, A. W. Treybal; Secretary, Wm. S. Richards, re-elected; Fleet Captain, Harry F. Beck; Fleet Surgeon, Dr. A. Ziegler. The Club is about to enter upon the 42nd year since its organization, and the year 1912 has every indication of being the most successful one on record.

Dixie Jr., a 20-Foot Hydroplane With a Speed of Over 35 Miles.

The development of the hydroplane has been so rapid during the past two years, and the speed has increased at such a wonderful rate, a jump of ten miles or more at a clip being quite common, that we haven't had time to lose our breath or gasp at the suddenness of it all, or to realize what it really means, but have accepted in a matter of fact way, what a very few years ago everyone (that is, every one except a few naval architects who had made a study of the subject) would have declared an impossible speed. Both motor and steam driven craft were a long time getting up to a 25-mile speed, but in the last two years this speed has been almost doubled by the perfecting of a principle of hull design and the use of the internal combustion motor.

Probably there is no one in this country who has ever been in a boat that does not know of Dixie IV and her 550-H.P. that shoves her along at a speed of 46 miles, plus; and while justly proud of her, they realize that she is so far out of their reach that there can be but one of her built every two or three years. But the principles that went to make Dixie's speed are applicable to a smaller boat at greatly lessened cost, and Tams, Lemoine & Crane, who produced all the Dixies, have just turned out a little 20-footer to be known as Dixie, Jr., with which goes their guarantee of 35 miles—and with this firm a guarantee is no mere guess, but the result of tests, knowledge and a careful study of every element entering into the calculation, and the reputation of the firm stands behind it. It is 35 miles an hour, or you do not have to take the boat.

A few years ago 35 miles in a boat only 20 feet in length would have been scoffed at as an impossibility. A boat of that length could not be *dragged* through the water at that speed and could not be built strong enough to hold together; it seemed like the delusion of an unsound mind. But the principle of the plane upset all previous theories and into Dixie, Jr., Mr. Clinton H. Crane has put not only the experience gained in Dixie IV, but also that gathered in subsequent exhaustive tests and experiments at the governmental tanks at Washington.

The power selected is a 45-65-H.P. 6-cylinder Sterling 4-cycle motor. The Sterling engine has made a wonderful record this year. The International Cup Defender Disturber II, the second fastest power boat in this country was powered with one of them, and the reliability of these new motors is beyond question, and their selection for this craft was undoubtedly a wise one.

Built by the Staten Island Shipbuilding Co., the same firm that built Dixie IV, the new boats will thus have a guarantee for workmanship and strength that would be hard to beat. They will be 20 feet in length by 4 feet 6 inches beam and will probable have a single step a little aft of amidships, as has Dixie IV.

The arrangement of the boat has been very carefully worked out. Forward, there is a small turtle-back deck. Directly aft of this is the helmsman's cockpit, in which are two comfortable seats. The throttle, clutch, spark, etc., are arranged as in an automobile, so as to insure perfect control by the driver at all times. Aft of this cockpit is the engine compartment. The motor being under a hood, all parts are easily accessible. There is an engineer's cockpit directly abaft the motor in the stern of the boat.

It is planned to build ten of these little boats as a stock proposition, and if this number is turned out it will make an excellent one-design class which will probably furnish more sport than anything of the kind that floats. Building them in this way they can be turned out at a price well within the reach of a man of moderate means, and there is no doubt that enough boats will be ordered to assure a class for next summer.

Camden Motor Boat Club Elects Officers.

Howard J. Dudley is now Commodore of the Camden Motor Boat Club, being elected to that position at the annual meeting, December 13. Following are the other officers chosen:

Vice-Commodore, A. S. Royal; fleet captain, Howard H. Demmert; treasurer, Austin M. Clark; corresponding secretary, Joseph F. Magee; financial secretary, George W. Johnston, Jr.; measurer, John C. Vanderslice; trustees, Joseph L. Shackelford, Frank Turner, W. P. Bradford, Charles L. Stewart, Frederick Reinoehl, S. S. Norcross, Joseph F. Magee; finance committee, E. C. Headley, J. L. Shackleford, W. P. Bradford.

The Middle Branch Motor Boat Club.

The Middle Branch Motor Boat Club, of Baltimore, Md., elected their officers a few weeks ago, for the year 1912, as follows:

Charles Altvater, president; John Boss, vice-president; William Ganter, commodore; Thos. L. Cardwell, vice-commodore; William Doell, Jr., rear-commodore; William H. E. Chase, treasurer; John Miller, recording secretary; William E. Miles, financial secretary.

The Club held a very successful Bohemian Night at their Club House on Thanksgiving eve, November 29th, which started at 8 p. m. sharp, and which continued right through the night.

New Class For Bayside Yacht Club.

Members of the Bayside Yacht Club are planning a one-design class for next summer. The organization took an unusually prominent part in racing last season and as a result the members came to the conclusion that the club should have a one-design class similar to the Star class or the Manhasset Bay "Bugs".

William Gardner is designing the new boats, which will be 27 feet, 9 inches overall; 17 feet 9 inches on the waterline; 6 feet 11 inches beam; 2 feet 6 inches draft and spread 350 square feet of canvas. The boat will have a centerboard, which, when down, will draw 5 feet 3 inches of water. There will be 1,200 pounds of ballast and the craft is expected to cost about $600. Already five boats have been ordered, and as each yacht is to be named after a seabird, the class is going to be called the Bayside Birds.

Officers of the Toledo Yacht Club.

The officers of the Toledo Yacht Club for 1912 are:

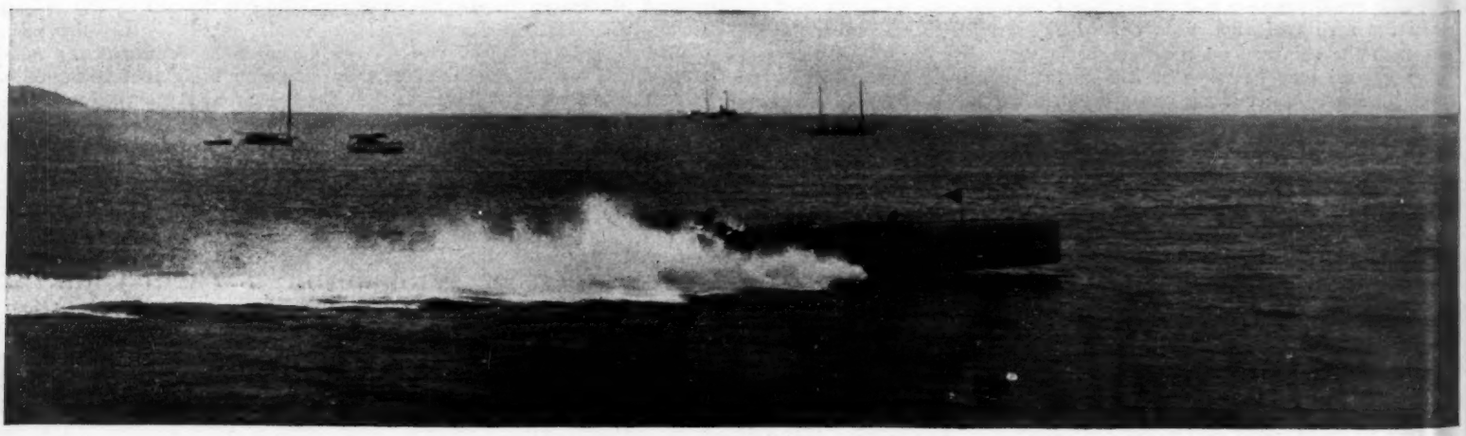
Commodore, Walter F. Brown; Vice-Commodore, Irving Squire; Rear-Commodore, Edward Ford; Recording Sec'y, A. B. Wills, Financial Sec'y, Frank R. Frey; Treasurer, C. A. Russell; Measurer, Walter Coakley; Fleet Captain, H. G. Affleck; Fleet Surgeon, Dr. P. E. Bethards. Trustees: Walter F. Brown, Irving Squire, Edward Ford, C. A. Russell, S. O. Richardson, Jr., W. F. Broer, George Hardy, W. L. Schumacher, S. L. McAffe. Delegate to I. L. Y. A., S. O. Richardson, Jr., Alternate to I. L. Y. A., A. H. Gallagher.

Fall River Yacht Club.

The following officers were elected by the Fall River Yacht Club at their annual meeting January 4th, 1912, for the year 1912: President, John A. Crowley; com., Frederick Webb; vice-com., Charles M. Freeborn; rear-com., Thomas L. Bartlett; sec., Frank Rivers; treas., Charles H. Davis; measurer, Herbert M. C. Skinner; for directors, John Dixon, F. H. Gooch, Henry R. Read.

Cleveland Ice Yachtsmen Have Good Sport.

With the first real tinge of winter that greeted Clevelanders, ice yachtsmen lost no time in making plans for the season. December 2nd, the annual meeting of the Cleveland Ice Y. C. was held. Commodore Carl R. Luetkemeyer was re-elected; A. Hives was elected vice-pres., and Otto Nehrenst secretary and treasurer.



DIXIE IV, THE WORLD'S CHAMPION MOTOR BOAT.

Varnish?

WHAT right has a varnish-maker to call his product a "Spar Varnish" if it turns white in water? A varnish which can't stand water is absolutely unfit for use on boats. The turning-white is a sign that the varnish has turned up its toes and died! There is only one varnish on the market which refuses to deteriorate that way. It is

VALENTINE'S
VALSPAR
"The Varnish That Won't Turn White"

Valspar is the *onlv* Spar Varnish. In the days before Valspar was invented boat owners were justified in getting along as best they could with the other varnishes which turned white after every soaking and which required renewal two or three times a season.

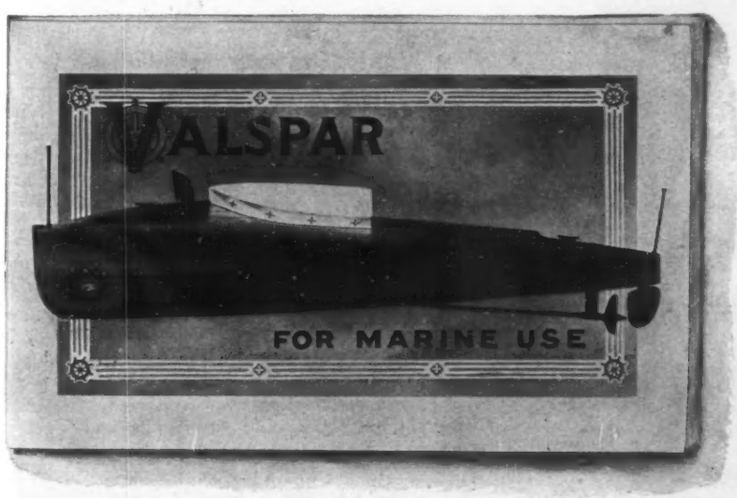
There is no need for such patience now. Varnish with Valspar at the beginning of the season and it will take care of itself till Fall.

Valspar dries very quickly, is tough, very pale and flows nicely under the brush. It marks a new era in Spar Varnish history.

New Booklet

Send for this new free booklet. It tells the whole story of this new development in Spar Varnishes. You need it as a matter of up-to-date information whether you are buying varnish at this moment or not. The most progressive naval architects and boat builders are using Valspar now for everything. All the American and English entrants in the International Motor Boat Races last Summer, for example, were varnished with Valspar although they came from widely separated shipyards. Among the experts the use of Valspar is already standard.

Send the coupon for the booklet!



THE NEW VALSPAR BOOKLET. SEND FOR IT.

See also our Public Test at all Boat Shows

TRADE VALENTINES VARNISH MARK

VALENTINE & COMPANY

257 BROADWAY, NEW YORK CITY

Chicago Boston Toronto
London Paris Amsterdam

FILL IN—TEAR OFF—MAIL TO-DAY

Name Y.-2

Address ....

Send me the new Valspar booklet and materials with which to test Valspar.

The Exhibit of Engines and New Models for 1912

KEEP THIS! It is valuable to you for future reference, as a guide to the products of the principal boat, engine and accessories manufacturers

THE following are the engine exhibits which will be seen at the Boston Motor Boat Show. The information contained in these descriptions was compiled especially for us by manufacturers of the various engines, and contains all the essential facts about their products. Where a manufacturer exhibits and makes both boats and engines the account of his engine will be found with a description of his boat exhibit.

The Buffalo Herd.

One of the largest exhibits of engines at the show is that of the Buffalo Gasolene Motor Company of 1260-72 Niagara Street, Buffalo, N. Y., which occupies on the main floor, space 70-74 inclusive. This company makes gasolene and kerosene engines for marine use of all types from heavy-duty to high-speed, including an auto-marine model.

Sizes. The engines to be seen at the Boston Show will be four heavy-duty models in 9, 12 24 and 36-H. P.; two of the Regular Type in 3 and 10-H. P.; two auto-marines in 25 and 40-H. P., and one 60-H. P. high-speed engine. These engines are of the 4-cycle type, and the range is wide enough to cover any use that may be desired. The company also makes stock models up to 125-H. P. Heavy Duty.

The Buffalo Gasolene Motor Company was one of the first to take up the manufacture of marine gasolene engines, and their motors have been so long and favorably known by reason of their reliability, workmanship and good material, that the exhibit will undoubtedly attract the close attention of those who know what points count in marine engines.

Some of the improvements in the 1912 model are a new arrangement for getting warm air to the carburetor to insure a better mixture, and a carburetor throttle with a control lever which is carried up alongside of the spark shifting lever, giving control at one point. The 10, 15 and 20-H. P. models are also fitted with a new inlet manifold. The keynote of the Buffalo Gasolene Motor Co's. product is Reliability, with a constant refinement of design.

Clifton Engines.

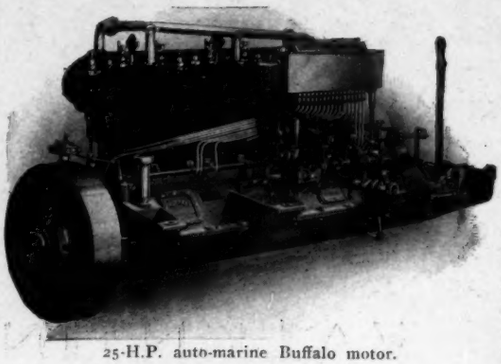
The Clifton Motor Works of 231 East Clifton Ave., Cincinnati, Ohio, manufacturers of the Clifton marine engines, exhibit a line of their 4-cycle, heavy and medium duty engines. This Company make a complete line of motors from 10-H. P. 2-cylinder to 150-H. P. 6-cylinder in both closed and open base. The 1912 model shows various improvements in oiling system, reverse gear, timer, etc. Prices range from $200 to $3,000.

Fox Motors.

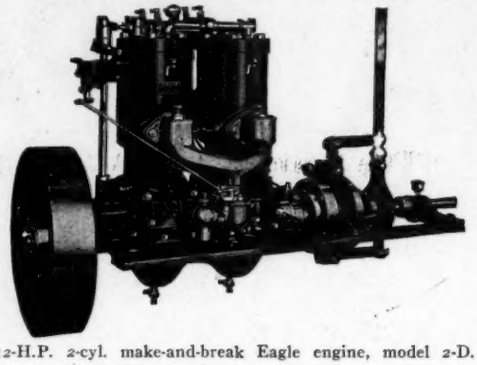
The Dean Mfg. Co., of 212 Front St., Newport, Ky., will have an unusually complete line of their Fox Motors at the Boston Show in space No. ——. Their full line consists of 22 sizes from 3½ to 90-H. P., 2-cycle engines, in heavy duty, medium duty, high speed and aero types, one of the new sizes for the year 1912 being a 60-H. P., 4-cycle motor weighing 200 pounds. One or more of each of these types will be exhibited at the show. These engines are all closed base models.

Sizes. The full exhibit will consist of a 3½ and 7-H. P. Fox Special; a 9-12 and 10-14-H. P. heavy duty; an 8-H. P. 2-cylinder medium duty; 4-cylinder, 50-H. P. Fox de Luxe; 3-cylinder, 21-H. P. medium duty, and 4-cylinder, 25-H. P. Fox de Luxe. Prices $75 to $1,350.

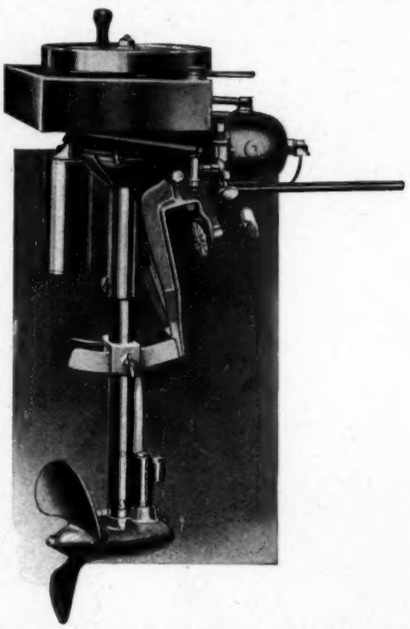
The company is also exhibiting the hull of their boat Bre'r Fox II which made the record run from Cincinnati to New Orleans at a rate of over 29 miles an hour.



25-H.P. auto-marine Buffalo motor.

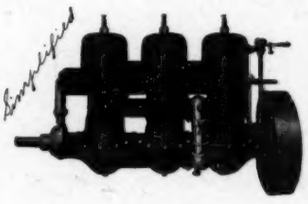


12-H.P. 2-cyl. make-and-break Eagle engine, model 2-D.



1½-H.P. Evinrude detachable motor for clamping on the stern of row boats or tenders.

Fox motor.
1-cyl. heavy duty



3-cyl. medium duty Fox motor.

A Full Line of Eagle Engines.

The Eagle Engine Company of 98 Warren Street, Newark, N. J., are occupying spaces 56, 57, 58, in which they are exhibiting a complete line of their Eagle engines of 1912 design. This is a 2-cycle engine made in speed, semi-speed and heavy duty model in from 1½ to 25-H. P. and from one to four cylinders. These engines are both jump spark, and make-and-break ignition and have closed base with hand hold plate. The largest sizes are equipped with Paragon reverse gears. Some of the points which the makers claim for them are accessibility, the best of materials and workmanship; an unusual range of speed control, the design of intake manifold and water circulating pump.

Their line is made up of three distinct types, composed of eighteen different size engines.

HIGH SPEED TYPE.
Light Weight, Jump Spark Ignition only.

MODEL	H.P.	SPEED	CYL.
G	3	800 to 1000	1
2G	6	800 to 1000	2
H	4½	800 to 1000	1
2H	9	800 to 1000	2

MEDIUM SPEED TYPE.
Jump Spark or Make-and-Break Ignition.

MODEL	H.P.	SPEED	CYL.
A	1½	600	1
B	3½	600	1
2B	7	600	2
3B	11	600	3
4B	15	600	4
C	6	600	1
2C	12	600	2
3C	18	600	3
4C	25	600	4

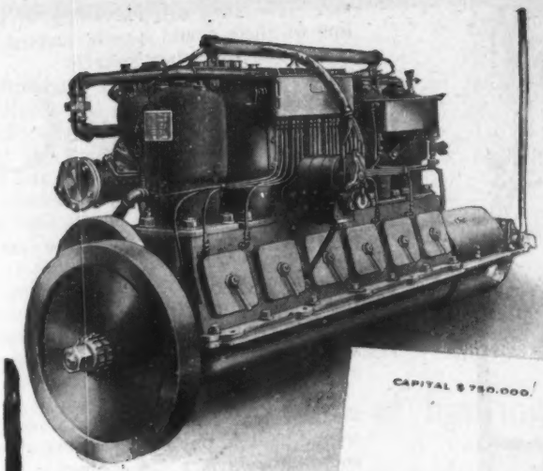
HEAVY DUTY TYPE.
Jump Spark or Make-and-Break Ignition.

MODEL	H.P.	SPEED	CYL.
F	2½ (over 3½ actual H. P.)	575	1
D	5½	450	1
2D	12	450	2
E	7	400	1
2E	15	400	2

Prices from $75 to $525. The policy adopted by the Eagle Company of having but one price, that price including a full and complete equipment and having each article clearly and distinctly named, is one of the reasons for their success.

The Evinrude Detachable Motor.

The Evinrude Motor Company of 235 Reed Street, Milwaukee, Wis., manufacturers of a detachable motor for row boats and canoes, are exhibiting in space 89 their 1½-H. P. 2-cycle, high speed motor. This motor is designed primarily for use in row boats or yacht tenders and has given satisfaction wherever tried. The weight of the motor is only 50 pounds and it clamps by means of thumb screws on the stern transom of a row boat, the propeller shaft working in an adjustable sleeve to give it any desired length necessary to fit any particular boat.



15,500 Miles in Five Years Without Repair

The actual record established by a "Speedway" Motor Boat equipped with the famous "Speedway" Engine. Read her owner's testimony.

CAPITAL $ 750,000. UNITED STATES DEPOSITARY SURPLUS $ 250,000.

THE
National Bank of Commerce
OF DETROIT

July 12,1911.

Mr. John J. Amory,
Gas Engine & Power Co.,
Morris Heights, N.Y.

My dear Mr. Amory:-

I have your letter of July 10th suggesting that we enter the Rainbow in the Great Lakes Power Boat League Cruise to contest for a prize offered by Mr. Scripps.

I am not much on cruising myself, especially for prizes, preferring to go it on my own hook and at my own convenience.

You will be interested to know that the Rainbow has logged a total of 15,500 miles since she came out, this being her fifth season.

She has undergone no repairs to hull or motor and insofar as I can see is in as good condition today as when you turned her over to us.

A record like this is the best prize that any man can have.

With kind regards, and thanking you for your suggestion, I am,

Very truly yours,

Richard J. Joy

SPEEDWAY
ENGINES

"High Prices, but Compensating Value"

Gas Engine & Power Co. and Charles L. Seabury & Co.
CONSOLIDATED
Morris Heights - New York City

All material used is of the best, the propeller, hub, shaft sleeve, and circulating pump being of bronze for salt water use. It is extremely simple, and is a strong, serviceable engine of a substantial type and not a plaything. It comes equipped with jump spark ignition system and the coil and battery are contained in a small portable box.

For use in row boats, for fishing purposes, or for a power tender for a small yacht, it is ideal, as it does not take up any room in the boat, and when it is necessary to row or tow the boat the motor can be detached by simply turning two thumb screws and lifting inboard. There is also an especial attachment for allowing its use on canoes or boats with a canoe type of stern where it can be clamped at any desired angle.

Prices $65 fresh water equipment; $68 salt water.

Full Line of Ferros.

The Ferro Machine and Foundry Company of Cleveland, Ohio, makers of the well-known Ferro engine, have on exhibit in booth number 66 a full line of their 2-cycle engines in both high speed and heavy duty. The Ferro line consists of 3, 4, 5½ and 7½-H. P. in single cylinders; 8, 11, 15-H. P. in 2-cylinders and 12, 17, and 25-H. P. in 3-cylinder engines. They are closed base engines with a Ferro reverse gear bolted on to the engine crank case. They are equipped with a Ferro automatic pressure oil feed, while crank case compression is used to force oil to the bearings. This improved oiling system is new with the 1912 model. The new models are also equipped with the magneto and timer control. Prices from $60 for 3-H. P. to $360 for 25-H. P. Besides the line of engines the new Ferro 1912 catalogue is ready for distribution at the show.

Frisbie Motors.

A full line of their 4-cycle medium duty, semi-heavy duty and high speed motors are being exhibited by the Frisbie Motor Company of Middletown, Conn., in space 1 and 2.

Sizes. The Frisbie line consists of the three types mentioned above, in power ranging from 3-H. P. single cylinder to 75-H. P. and 6-cylinder. A new size has been added for 1912 in an 8-12-H. P. 4-cylinder, 4-cycle, 4 by 4½ inches bore and stroke. Prices $160 to $1,320.

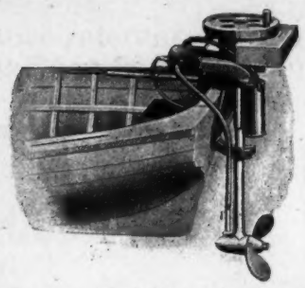
The Frisbie Company claim their motor to be one of the foremost examples of the valve in the head type of engine which is unsurpassed for simplicity and economy. The cylinder construction is shown in a cross section and is of interest to all those who know what high class motor construction is.

The engines are closed base with a paragon reverse gear on an extension bed plate and a ring oiling system on crank shafts. The 1912 model has improved water jacketed exhaust manifold, eliminating all brass piping from top of cylinder and allowing immediate access to valve system.

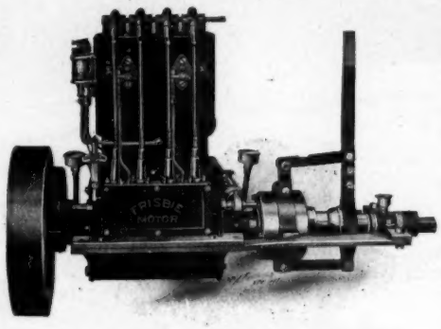
The Fulton Two Cycle Engine.

The Fulton Manufacturing Company of Erie, Pa., are exhibiting in space 20-23 all sizes of their 2-cycle, medium duty, jump spark marine engine. The line consists of 2½, 5, 7½-H. P. single cylinder, and 6, 10 and 15-H. P. double cylinder. The engines are furnished with sight feed oilers and hand force grease cups, or with the Detroit mechanical lubricator. The engines are equipped with the Wico ignitors which completely do away with the coil, battery, switch and commutator, simplifying the ignition apparatus. The engine is especially adapted to launches, cabin cruisers, passenger boats, and fishing boats of all kinds up to those requiring a larger engine than 15-H. P.

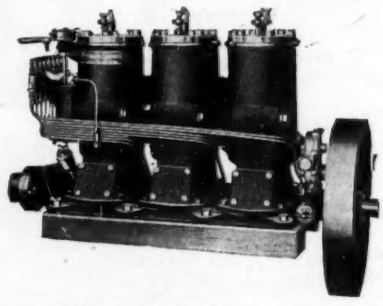
Price range $110 to $385



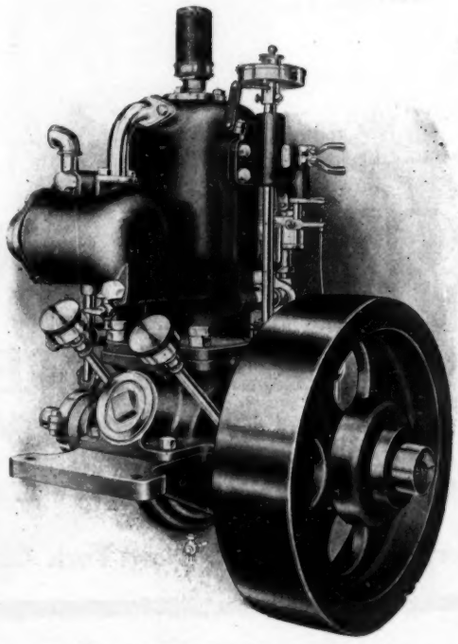
Evinrude motor attached to stern of rowboat.



Frisbie 2-cyl., valve-in-the-head motor.



18-H.P., 2-cycle, Type "G" Fairbanks-Morse engine.



New model C 6-H.P. Eagle engine exhibited by A. P. Homer.

New Fairbanks-Morse Engines.

Fairbanks, Morse and Co., of Chicago, I and New York are exhibiting in space 20-2 line of their 2 and 4-cycle motors. These co sist of the following Sizes:

One 3½-H. P. type E single-cylinder engi and one type E 7-H. P. 2-cylinder engi These are light-weight high-speed, 2-cycle e gines. One 6-H. P. 1-cylinder, one 12-H.P. 2-cy inder, one 18-H. P. 3-cylinder and one 24-H. 4-cylinder type G. These are 2-cycle engines m dium speed, designed especially for pleasu boats. These engines will be regularly fit with timer or Delco ignition. Two, thr and four-cylinder engines are also shown wi high tension magnetos. New features of refi ment have been added which will appeal to th interested in having strictly high grade, depen able power.

There will also be shown for the first ti the new type K, heavy-duty, slow-speed, 2-cy engine built in one cylinder developing 7½-H. and two cylinders developing 15 H. P., mak and-break ignition. The features of the ne types will be a specially designed manifold, com bining intake and exhaust. Exhaust will water jacketed and fitted with air pocket a piping to the carburetor, furnishing warm if desired. The cylinder head will be wat jacketed and fitted without gasket. Water w be by-passed through the cylinder head so th no water comes in contact with the joint. T igniters will be fitted to ground-joint—no gask used. The bearings will be extremely well pr portioned of phosphor bronze, removable typ Prices $65 to $510.

Goshen Motors.

Through W. W. Meek, their New Englan representative, the Goshen Motor Works of Gos en, Indiana, are exhibiting in space 101 a line 2-cycle engines which have many points to com mend them. These engines are made in mediu weight and speed models in the following size 3, 6 and 15-H. P. single cylinder; 8, 14, 35-H. double cylinder and 10, 24 and 56-H. P. 3-cyli ders. It is a closed base engine made in both two and three port type, the two port havi an improved springless check valve. It has mechanical oiler and Gies reverse gear, thoug any other gear will be furnished if desired. Eve power in a multiple cylinder is obtained by u of ball checks in the valve, there being no sprin to adjust. It is very accessible, piston and r being removable without disturbing the oiling circulating system. Price range $95 to $1,200.

Arthur P. Homer.

In spaces 56, 57 and 58 A. P. Homer, of 1 State St., Boston Mass., New England agent fo a number of well known manufacturers will ex hibit a complete line of Eagle engines, includin the new 1912 models; a line of the Sterling en gines, including their new 130-140-H. P. hig speed motor; and the Reynolds Rotary Valv motors. The full description of these engine will be found under the names of the manufa turers.

The Ideal Engine.

On the main floor in space No. 65, V. Emery, of Wollaston, Mass., manufacturer o the Ideal Marine Gasolene Engine, will show line of these well-known 4-cycle engines. Th line will consist of 16, 25 and 40-horsepower en gines, all of 4-cylinders, and possibly an 8-horse power, 2-cylinder motor. One of the princip features of this motor is the design of the ex haust port, which runs directly down into a expansion chamber between the cylinders an

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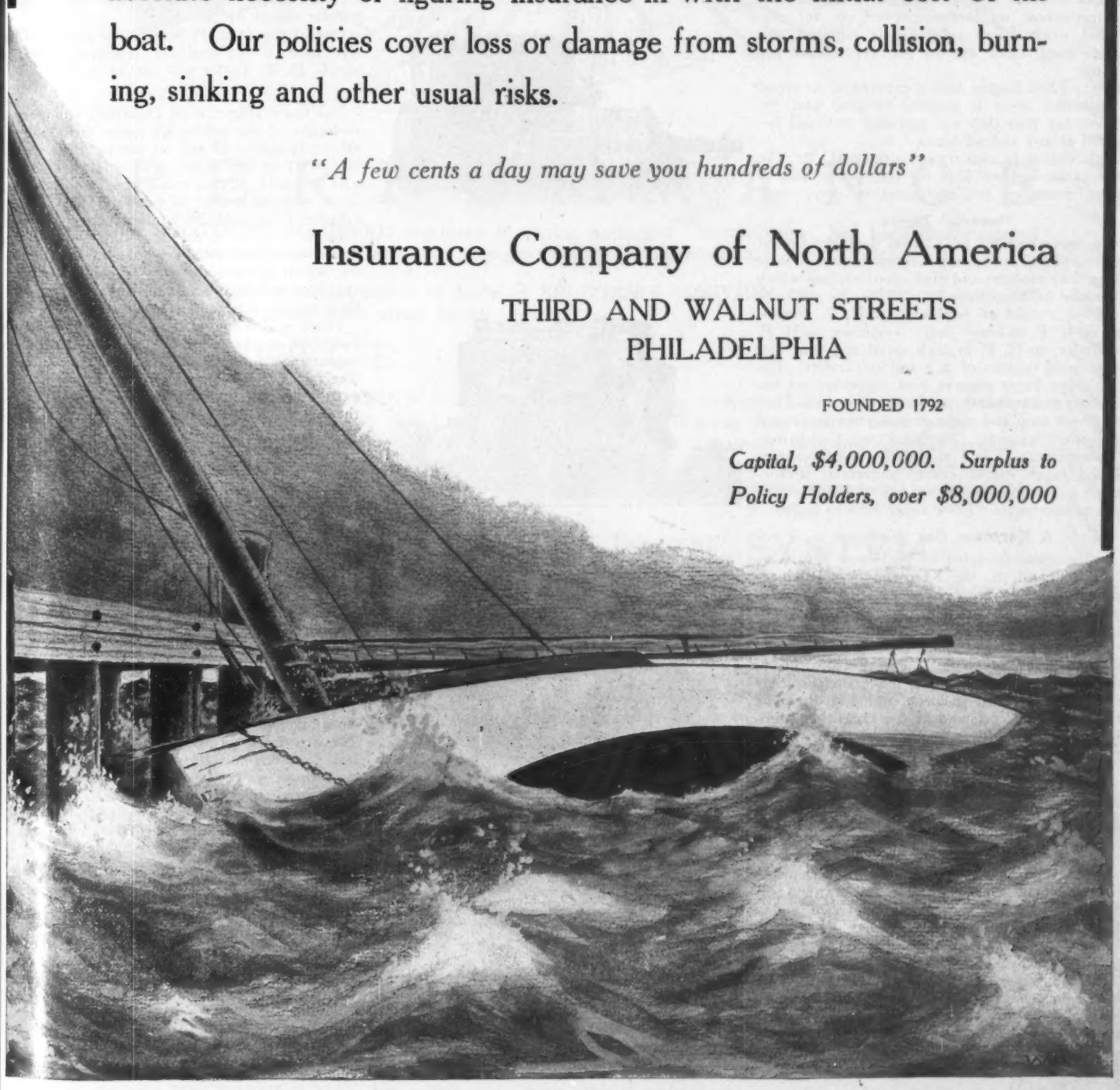


Consult YACHTING'S Information Department on any of your problems. Its service is absolutely free.

into the manifold, which is at the base of the cylinders where it is out of the way and is much less unsightly than when located near the top of the motor. This method condenses the hot, exhausted gases, thereby reducing back pressure on the engine and greatly minimizing friction. The result is an absence of vibration and noiseless operation of the engine. The cylinders are cast in pairs, with removable heads, and are cast from semi-steel, a metal especially suited to withstand the explosive shock to which it is subjected in an internal-combustion engine.

All sizes above 4-horsepower are fitted with a reverse gear and clutch of a perfect mechanism for its purpose—forward neutral and reverse motions being obtained with very little effort. The operating gears are of steel and bronze, always in mesh, the whole being a unit in connection with the engine. The Ideal Engine is a medium-speed, medium-weight engine for all-around work where reliability is required, the range being from 450 to 700 revolutions per minute.

Every Ideal Engine sold is covered by as broad a guarantee as it is possible to give, and the makers say that they are prepared to stand behind it at any and all times.

This engine is also made in 60-70-H. P. The price range is from $245 for the smaller size to $2,575, including full equipment in every case.

Powerful Jagers.

In space number 19, Charles J. Jager Co. of Boston, Mass., is showing a complete line of their heavy duty medium and high speed engines which are made in large sizes.

These consist of 3-cylinder, 30-H. P. 6-cylinder, 60-H. P. in heavy duty; 6-cylinder, 55-H. P. 4-cylinder, 50-H. P. in high speed and four medium speed engines of 2, 3 and 4-cylinders. Engines have Jager reverse gear supported on engine base and use pump circulating oil system. They are closed base and made in make-and-break and jump-spark ignition. "Staying Power Conclusively Demonstrated" is a record the manufacturers of the Jager engine claim, continuous performance under full load being one of the standard shop requirements. Price range $280 to $2,800.

A Kerosene Gas Producer.

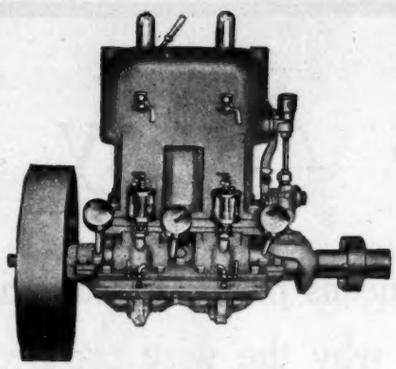
In the space occupied by the Loew Mfg. Co., booths 68 and 76, the Kerosene Gas Producer Co., of 1926 Broadway, New York City, have in operation on one of the Loew-Victor engines, a new gas kerosene producer device which they are putting on the market. This producer plant is suitable for any type of engine from 2½ to 500-H. P., and with it the makers claim they can run any kind of gasolene engine on kerosene at one-half the cost, and at the same time eliminate the danger from fire or explosion.

Lackawanna Engines.

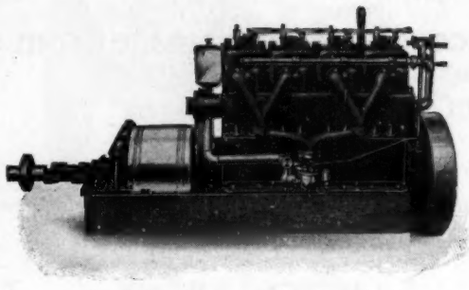
The Lackawanna Mfg. Co., of New York and Newburgh, exhibit a line of their heavy duty and high speed Lackawanna engines in the following sizes which comprise their full line:

2, 4½, 5, 9 ,12, 15, 22, 25, 27, 30-35, 45-55, in from 1 to 6 cylinders. Some of the improvements which have been added to the Lackawanna engines this year are a new timing device, and a choice of two or three port engines, with either plunger or gear pump. The prices range from $50 to $1,000.

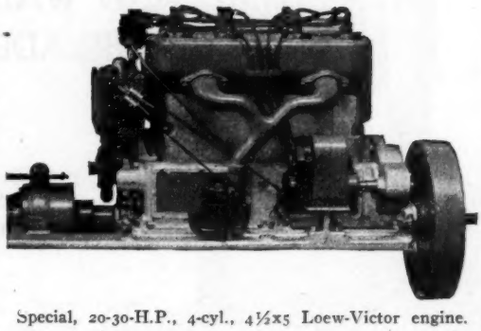
Through years of experience in hardest usage the number of parts has been reduced to a minimum, thereby practically eliminating all screws and fastenings so only a few strong hex head bolts and hex lock nuts are required, interchangeable parts throughout.



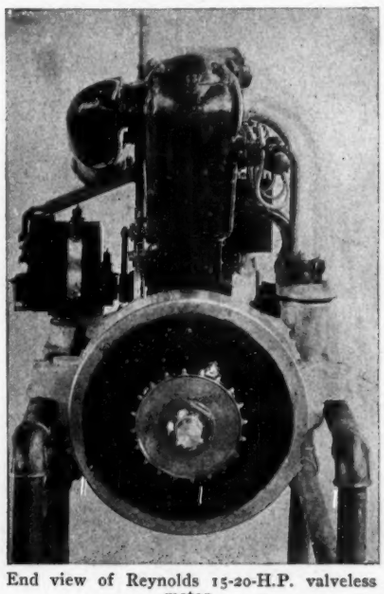
The simple, 2-cycle Lackawanna engine.



Lamb, 4-cyl., 24-H.P. Type R engine.



Special, 20-30-H.P., 4-cyl., 4½x5 Loew-Victor engine.



End view of Reynolds 15-20-H.P. valveless motor.

Lambs Of All Sizes.

One of the many interesting and attractive exhibits of the show is that of the Lamb Boat and Engine Co. of Clinton, Iowa, with a line of 4-cycle, heavy duty, medium and high speed engines in 10, 24 and 60-H. P. with one 6-cylinder 60-70-H. P. High speed Overhead Valve Type. This is the motor used in the Helen E, the Lawley High Speed mahogany cruiser owned by Mr. O. C. Sanborn of Boston.

Sizes. The Lamb Co. make engines from 10 70-H. P. and from 2-6-cylinder, a new size for 1912 being a 2-cylinder, 4½ by 6¾ inches motor.

These engines are closed base and fitted with the Detroit force feed lubricator ratchet driven and have the reverse gear and clutch manufactured by the Lamb Boat and Engine Co. A high grade of material, workmanship and finish, with a record for reliability, makes the Lamb booth a popular corner of the show.

One of the 40-H. P. heavy duty motors of the type used in the auxiliary Autocrat owned by Mr. C. H. W. Foster will also be shown.

Loew-Victors.

The Loew Mfg. Co., of Cleveland, Ohio, manufacturers of the celebrated Loew-Victor motors exhibit in spaces 68 and 76, six complete engines in from 1 to 6-cylinder. The single-cylinder engine is a 6-H. P. iron crank case motor designed to develop its power at 600 R. P. M. The 2-cylinder is a 12-H. P. kerosene burning engine. This is a new model for 1912, and will be shown complete with kerosene-burning apparatus, which is the retort process which has given excellent satisfaction. The 3-cylinder engine is their regular medium speed outfit.

There is also a 30-H. P. high speed gentleman's runabout engine rated at 30-H. P. though the guarantee it to develop 40-H. P. at 1300 R. P. M. Their other two engines are their 24 and 60-H. P. extreme high speed motors, the latter of which the Loew Co. guarantee to develop 75 H. P. at 1300 R. P. M.

These engines are typical of the line of Loew 4-cycle marine engines. The engines are fitted with reverse gear and full equipment. The prices run from $135 to $850.

The Reynolds Valveless Motor.

The Reynolds Motor Co., of Detroit, Mich., makers of the Reynolds Rotary Valve 4-cycle engine, are exhibiting through A. P. Homer in spaces numbers 55 and 57 two of their motors in 15-20 H. P. 3½ by 4½-inch 4-cylinder and a new 6-cylinder 4½ by 6-inch. The 6-cylinder has a divided head, integral crank case with hand hole covers running the full length, and reverse gear case. The makers claim that these are the only 4-cycle motors built especially for marine work showing the departure from the poppet valve. There is not a spring in the motor and there are less than one-half the number of parts used in the poppet valve type. There are no moving parts exposed except the fly-wheel which makes it an extremely silent running motor. At present it is made in these two sizes only.

Price, 4-cyl. engine $375 complete.

Murray & Tregurtha.

The Murray & Tregurtha Co., of 340 West First St., Boston, Mass., are the makers of the Murray & Tregurtha engine which is noted for reliability wherever it has been used. This is a 4-cycle open base engine made in various sizes the 60-H.P., 4-cylinder engine being particularly popular for cruising boats from 50 to 70 feet in length. Among the boats which this firm has built recently which have attracted attention are the 50-footer Triune and 52-footer Tern, both fine examples of construction and finish.

SPLITDORF MAGNETO

"Always There"

PERFORMANCE

of SPLITDORF EQUIPPED machines in racing hulls and "knockabouts" has been demonstrated by a remarkable record of efficiency in a comparatively limited time.

No more convincing argument in favor of SPLITDORF IGNITION can be advanced than the official racing figures—they stand for all time.

SERVICE

of SPLITDORF EQUIPMENT is always demonstrated by usage. Like the world's headiest racing drivers you will find that a SPLITDORF MAGNETO gives your motor more power—that it makes your motor run much smoother and quieter—that you never have any ignition trouble—that it gives the same efficient service without attention even after thousands of miles—that you can run slower than with any other magneto—that the engine never skips—that it is simple, positive, reliable—in short, that it is

AN IDEAL IGNITION SYSTEM

Investigate, too, SPLITDORF "GEM" TYPE MARINE COILS. Both price and performance with time quality guaranteed, will surprise you. They are built in covered oak boxes, PROTECTING ALL PARTS. They are of the highest grade with interchangeable units and are economical on batteries. Single cylinder at $6—also made for two, three and four cylinder.

Our SERVICE DEPARTMENT is at your disposal, so make a point of it TO-DAY to WRITE FOR INFORMATION.

Write for our Magneto catalog.

C. F. SPLITDORF

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The Regal Line.

The Regal Gasolene Engine Co., of Coldwater, Michigan, are exhibiting in space numbers 50 and 64 a line of Regal engines consisting of one each of the following sizes:

4, 5, 6, 10, 12, 14, 24 and 28-H. P.

The full line of Regal engines is as follows:

TYPE	POWER	REV.	CYL.
High Speed	3 H.P.	700 r. p. m.	1
" "	4 H.P.	700 "	1
" "	6 H.P.	700 "	2
" "	8 H.P.	700 "	2
" "	12 H.P.	700 "	4
" "	16 H.P.	700 "	4
Medium Duty	5 H.P.	450 "	1
" "	10 H.P.	450 "	2
" "	24 H.P.	500 "	4
Heavy Duty	7 H.P.	400 "	1
" "	14 H.P.	400 "	2
" "	28 H.P.	400 "	4
" "	45 H.P.	400 "	4
Automobile Marine	32 H.P.	1000 "	4

Prices from $95 to $1,200.

All the light duty engines for 1912 will have manifolds similar to the medium and heavy duty engines. This type of manifold contains exhaust passage which is water jacketed together with inlet passages from carburetor to each of the cylinders. In this manner the exhaust pipe is kept cool and the inlet passages warm, making an economical as well as a compact, neat appearing engine. All the 2 and 4-cylinder engines together with the 1-cylinder 7-H. P. engine have the reverse gear built in extended engine base.

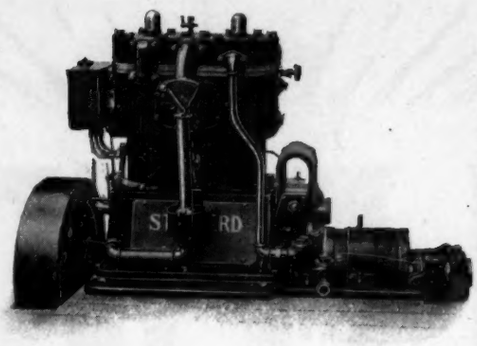
Standard Motors.

The Standard Motor Construction Co., of 186 Whiton St., Jersey City, N. J., are showing in space 7 and 8 on the main floor three of their well known engines. The Standard company was one of the first makers of reliable internal combustion engines, and since the early days their engines have earned a reputation for reliability under all conditions which has never been questioned.

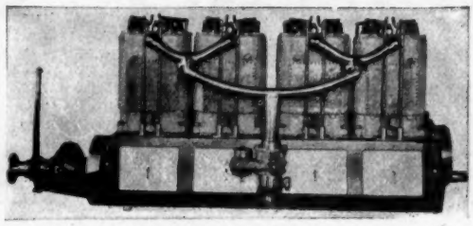
The Standard is a 4-cycle engine which is made in sizes from 8 to 1,000-H. P. and a full line of their stock engines is as follows:

Guaranteed Brake H. P	Num. of Cyl.	Num. of Rev.	Weight of Eng. Only
8-10	2	400	850
12-16	2	350	1,200
16-20	4	400	1,600
18-23	3	350	1,800
25 Auto Marine	4	900	500
25-32	4	350	2,800
40-50	6	350	3,200
50-65	4	350	5,300
60 Auto Marine	6	700	1,500
75-90	6	350	8,000
100-125 Single Acting	6	350	5,800
175 Double Acting	4	350	4,500
300 Single Acting	6	300	9,500
300 Double Acting	6	300	8,000
500 Double Acting	6	300	16,000
700 Single Acting	4	280	17,500
100 Double Acting	6	280	25,000

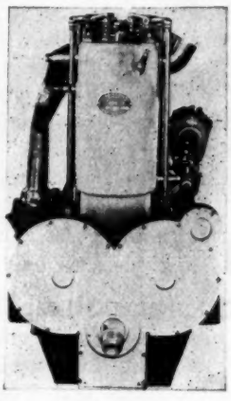
These engines are make-and-break, the "Standard sparker" being contained in one piece which can readily be removed without changing any of the adjustments. Contact points are tipped with platineo-iridium which insures long wear and clean points. The Standard prices include complete equipment including reverse gear, magnetos, oiling system, etc. The sizes exhibited are the 8, 16 and 24-H. P. engines.

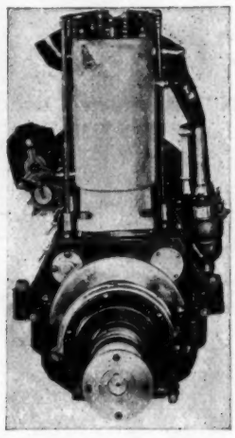


Two-cylinder type, Standard, 8 and 12-H.P. engine.

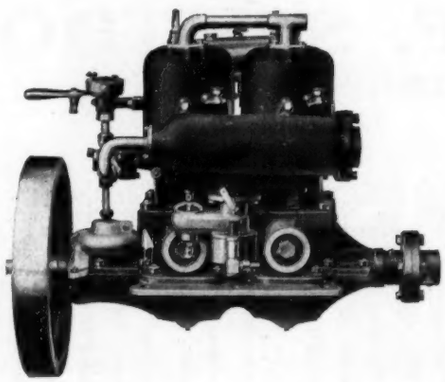


Intake side new Sterling 8-cylinder, 130-140-H.P. high speed engine.





Front and rear view Sterling 8-cylinder 130-140-H.P. speed engine.



Wisconsin Machinery Co., 2-cyl. 10-H.P. motor.

New Sterling Models.

The Sterling Engine Co., of 1258 Niagara St., Buffalo, N. Y., will have on exhibition through their New England Agent, Mr. A. P. Homer, a line of their well-known Sterling engines. These engines have made such a reputation for themselves in all classes of boats, and the high speed type has done so well in racing boats the last year that the exhibit is one of unusual interest.

The full line of the sizes which the Sterling Company makes is as follows:

Heavy Duty	Speed Type
8-10 H.P. 2-cylinder.	18-25 H.P. 4-cylinder.
12-15 H.P. 2 "	25-40 H.P. 4 "
25-35 H.P. 4 "	35-55 H.P. 6 "
20 H.P. 2 "	30-45 H.P. 4 "
40 H.P. 4 "	45-65 H.P. 6 "
60 H.P. 6 "	130-140 H.P. 8 "
100 - H.P. 8 "	180 - H.P. 6 "
	240 H.P. 8 "

The new models for 1912 are: The 25-35-H. P. with 5½-inch bore by 8-inch stroke. This machine is designed especially for heavy-duty work and develops its power at 400 and 550 R. P. M.; the 100-H. P. heavy-duty with 6½ by 8 inches; and the 130-140-H. P. This last is a specially constructed speed engine for racing boats and fast cruising work and has a bore of 5½ inches and stroke of 6¾ inches. It turns up its power at 1000 and 1200 R. P. M.

In building their new 130-140 Engine the Sterling Co. has produced an engine of a three-point suspension and modified barrel type. The advantages of this type are many, as it has been demonstrated that the successful power plant for hydroplanes is of this design.

The engine is a handsome piece of work and shows a simplicity of construction and lack of intricate and complicated parts. Strength has not been sacrificed to reduce weight. The parts are all of special steel, the best that can be procured. It has the lines of the thoroughbred and is justly entitled to the name inscribed on it, "The Engine of Refinement For the Fastest Boats that Float."

It has been found that engines in hydroplanes were practically trying to hold the boat stiff and that the tremendous strain caused by the bending of the hull had in some cases pulled the lag bolts out of the engine bed.

In this new 8-cylinder, 130-140-H. P. racing engine, 5½ inch bore, 6¾ inch stroke, the entire base is of manganese bronze and of a modified barrel type. The suspension is similar to that of an automobile engine and permits the foundation to twist and turn but protects the motor and puts no strain upon it. No matter how much the boat hull is distorted, it allows the power plant to transmit its full engine power to the propeller.

The entire engine weighs under 1100 pounds with full racing equipment. The cylinders are cast in pairs, valve-in-the-head type, with large water spaces for cooling both cylinders and valves. Jackets are unusually long. Inlet valves are of cage type and exhaust valves seat on water cooled heads. Each side is provided with large hand hole plates held in place by a single bolt. This construction makes the interior easy to reach.

The crank shaft is of chrome nickel steel, with a tensile strength of 112,000 pounds to the inch. The two end main bearings are of a radial, ball type, the intermediate being the usual suspended babbitt lined box.

Wisconsin Valveless 2-Cycle Motors.

In space No. 67 the Wisconsin Machinery & Manufacturing Co., of Milwaukee, Wis., exhibit

EVENTUALLY
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New York, U. S. A.

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a line of their Wisconsin Valveless 2-Cycle Motors in medium and high speed types. These valveless motors are guaranteed against back fire regardless of the speed of the engine and load, and all shafts including those of the 4-cylinder are counter-weighted, eliminating vibration. They have a jump-spark ignition and closed base and use a gravity oiling system on the 1 and 2-cylinder engines, a mechanical oiler on the others.

They are made in the following sizes:

5 and 7	H.P.	Single cylinder
10 and 15	H.P.	two "
20 and 27	H.P.	three "
30 and 40	H.P.	four "
45 and 60	H.P.	six "

The prices range from $85 to $1,200 including complete equipment.

The cut herewith shows the 2-cylinder 10-H.P. motor. The sizes seen at the show are 5, 10, 15, 20, 27 and 40-H.P. The improvements on the 1912 model include the use of a removable combination screen in the by-pass of the cylinder, making a base explosion impossible.

Wolverine.

The Wolverine Motor Co., of Bridgeport, Conn., makers of the Wolverine heavy duty 4-cycle motors show a line of four engines for heavy duty boats, both commercial and pleasure, in booths 24 and 25. Their exhibit consists of a 5, 18 and 50-H. P. engine, also a new 5½ by 7-inch model which they are putting out this year for the first time. The full line of the Wolverine consists of a 5-H. P. single cylinder, 12-H. P. double cylinder, 12, 18, 27, 36, 50, 65, 75 and 100-H. P. motors in three cylinders.

Van Blerck Motors.

In space No. 102 the Van Blerck Motor Co., of Detroit, Mich., makers of the well known Van Blerck motors exhibit four sizes of their line of 4-cycle heavy-duty and high-speed engines. The full line of Van Blercks consists of 2-cyl. 15-H. P.; 4-cyl. 35-H. P.; 6-cyl. 45-H. P. in Type B heavy duty, and 4-cyl. 60-H. P.; 6-cyl. 90-H. P. 8-cyl. 120-H. P. in Type C, high speed engine.

Type B, 5-inch bore by 6-inch stroke.

Type C, 5½-inch bore by 6-inch stroke.

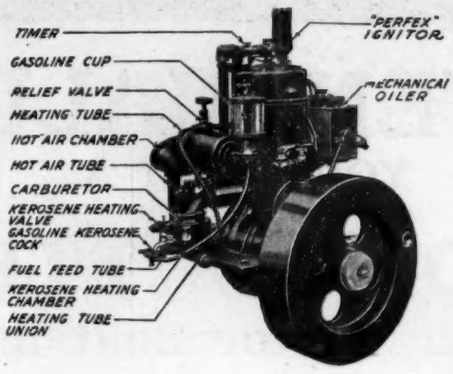
They also build a 12-cylinder 200-H. P. motor, the 120 and 200-H. P. being new models for 1912. These engines have closed base, Paragon reverse gear and force feed oiling system. Prices range from $440 to $3,650.

Some New 1912 Models

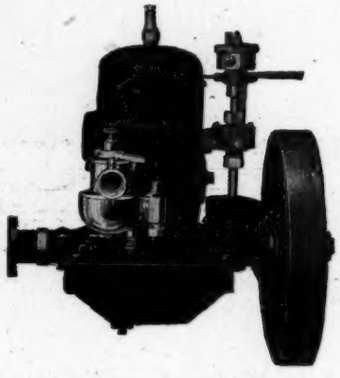
A New Knox Engine.

The Camden Anchor-Rockland Machine Co., of Camden, Maine, manufacturers of the Knox engine, have added to their line for 1912 a new 30-H. P. 4-cyl. 2-cycle Knox engine, which, in view of the reputation for reliability which this engine has established should be very popular for the larger size boats. The full line which the Camden-Anchor Co. manufacture consists of the following sizes: 3 to 7½-H. P. single cylinder; 9 to 20-H. P. 2-cyl; 22-H. P. 3-cyl. and 40-H. P. 4-cylinder, in addition to the new one just mentioned. These are heavy duty engines, in 2 and 4-cycle types, the 1912 model having a number of minor improvements and refinements in design that aim to increase their durability. They are a closed base engine using both gravity and force feed oiling systems, according to size.

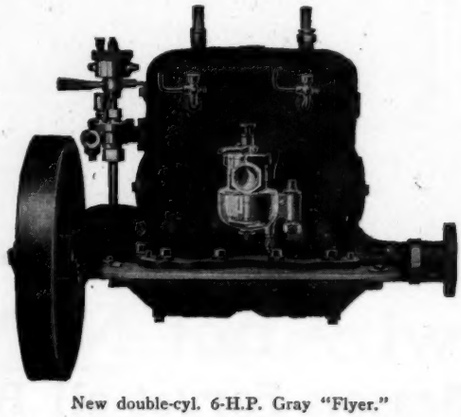
It was one of these single-cylinder engines that was in the little yawl Sea Bird when she made her trip across the Atlantic last summer, and the success of her trip was largely due to this motor. The Camden Anchor-Rockland Co., claim for the Knox engine power, durability, reliability and simplicity.



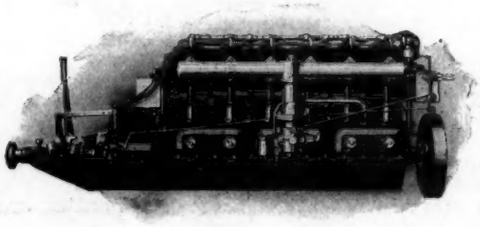
Single cyl. 3-H.P. Knox engine, made by Camden Anchor-Rockland Machine Co.



New single cyl., 3-H.P. Gray motor with Krice carburetor.



New double-cyl. 6-H.P. Gray "Flyer."



6-Cyl. 4-cycle Van Blerck high speed engine.

New Elbridge Engines.

To produce a 10-horsepower engine with a weight of 60 pounds, and to guarantee it to run ten consecutive hours at a load speed of more than 1000 r. p. m. seems at first glance a remarkable accomplishment. But this new Baby "Featherweight" really offers less power for weight than other standard engines turned out by the Elbridge Engine Company during the past three years. They make a 40-H. P. engine that weighs, all on, less than 200 lbs., and a 60-H. P. at less than 300 pounds.

To give the utmost of gas-engine power at a minimum weight and bulk has been the endeavor of the Elbridge Engine Company for several years. The degree of success with which their product has met is attested by their claim that more successful aeroplanes were equipped with Elbridge engines during 1910 and 1911 than with all other American motors combined.

Not content with offering a general purpose motor of maximum power for weight the Elbridge Company for 1912 has developed a series of highly specialized engines for particular service; for example, the Baby Featherweights for light, fine tenders; the 30-H. P. Type C for V-bottoms; types A and B for medium speed launches and runabouts; and the Elbridge Featherweights for racers, hydroplanes, and aero-hydroplanes.

In New York City the Elbridge Engine Company will be represented by Bruns, Kimball & Co., 132 Liberty Street, where all types of Elbridge Engines will be on exhibition. Any special information can be had by addressing the Elbridge Engine Co., 20 Culver Road, Rochester, N. Y., and mentioning that you are a reader of YACHTING.

Two New Gray Models for 1912.

The Gray Motor Company of Detroit, Mich., are bringing out two distinct new models for 1912. One is a single cyl. 3-H. P. in which simplicity of design and construction will be the main features. The design is such that the Gray Motor Company will be able to manufacture them in very large quantities, consequently selling them for an exceptionally low price. This motor has a 3¼-inch bore, 3½-inch stroke and weight 98 pounds; is of the 3-port type with special non-back-firing device in by-pass, having all the advantages of the simplicity of the 3-port motor with its disadvantages eliminated. It has long interchangeable bearings—both main bearings and connecting rod. It is designed to lubricate through the gasolene.

Although this motor will sell for a remarkably low price, it will still embody the usual Gray quality, high grade material and careful workmanship, having ground cylinders, piston rings, and pistons, ground crank shaft, counterweighted, long bearings, baked enamel finish, elevated timer control and Krice carburetor.

The other new model is a 2-cyl. 6-H. P. engine. There has always been a great demand for a smooth running compact, reliable, 2-cyl. engine that could be sold at a reasonable price.

Many 2-cyl. 6-H. P. motors have been put on the market but it seems that the really good ones were just a little too high in price to sell in large quantities, and it was only a question of designing a 2-cyl. 6-H. P. engine that could be manufactured in a manner to cut down the cost and at the same time have durability, efficiency and reliability.

The Gray Motor Company will be glad to give special advance information on these new models to anyone requesting it.

The 6-H. P. answers the same general speci-

The 1912 Loew-Victor Engine Is A Complete Marine Motor

It Includes Absolutely All Accessories

IN the 1911 Loew-Victor we offered a complete machine—a year at least in advance of its competitors in equipment and manufacture. For 1912 we are offering a motor complete in a broader sense, with an equipment of accessories of a more expensive type. The price charged covers the complete motor with full equipment.

Ignition Systems

Bosch Magneto is regular standard equipment of all 4 and 6 cylinder 1912 Models with Connecticut Igniter operating on a separate and distinct set of plugs. This gives two distinct systems of ignition with two separate plugs in each cylinder. This eliminates absolutely any ignition troubles that put the engine out of commission.

Both the Connecticut Igniter and the Bosch Magneto are the most expensive instruments of their kind on the market, and acknowledged to be the best. All cables and wires are connected up to the respective instruments before motor is shipped from the factory.

Oiling Systems

The 1911 Loew-Victors carried the straight splash oiling system, which was very satisfactory. For 1912 to make this feature doubly sure, we are installing a mechanical oiler in addition. Nothing can be more positive than both systems working together.

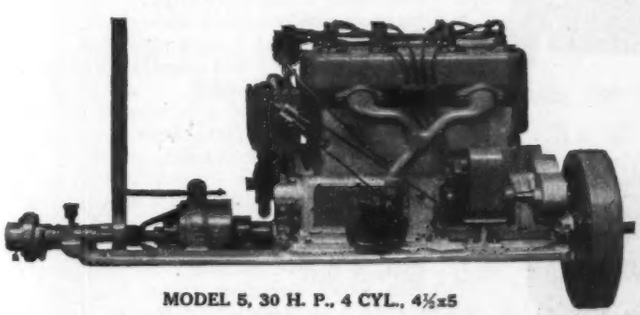
Reverse Gear

To have the best reverse gear on the market requiring the least attention, and with the simplest adjustment, we have this year adopted a disc clutch, with almost double the plates usually found in disc clutches, with material of the finest grade in the pinions and gears. This is a straight planetary type reverse gear and multiple disc clutch running in oil, designed and built especially for Loew-Victor Motors; of ample capacity to hold down double the power developed by the motor to which it is attached. This gear positively eliminates reverse gear troubles.

Air Compressor

With the 1911 Model we know we furnished the best Air Compressor on the market. Our 1912 air compressor carries some notable improvements. It is installed directly in the base of the machine requiring no oil safety valves, or in fact any attention. Pumps 60 pounds on the tank and recuperates—recuperates sufficiently fast to accommodate any whistle. The operator will not know that he has one of these on his engine except that he has air continuously without attention.

With these improvements the Loew-Victor is in a class entirely by itself. No other engine is offered so completely equipped or with such high grade equipment, material and workmanship as in the Loew-Victor. Each crank shaft is guaranteed to pull 105,000 pounds per square inch, besides being proportionately larger.



MODEL 5, 30 H. P., 4 CYL., 4½x5

Model	10—1	Cylinder	4¾x5½— 6 H.P.
"	11—2	"	4¾x5½—12 H.P.
"	12—3	"	4¾x5½—18 H.P.
"	13—4	"	4¾x5½—25 H.P.
"	5—4	"	4½x5 —30 H.P.
"	14—6	"	4¾x5½—36 H.P.

FREE BOOK.—Full of facts that every motor boat owner should know about Marine Motors, will be sent you on request. It illustrates all the above Loew-Victor Motors and gives detailed descriptions—as well as convincing proof of their unrivaled superiority in service. Write for this Free Book Today.

The Loew Manufacturing Co.

1909 MADISON AVE. - - CLEVELAND, OHIO

New York Office, Room 726, 30 Church Street

fications as the 3-H. P. Has a bore 3½-inch, stroke 3½-inch, weighs 138 lbs. It is light enough to use in a canoe or a 14-foot dinghy and at the same time is strong enough to drive a 25-foot family launch at a fairly good speed.

Perfection Motors.

The Caille Perfection Motor Co., of Detroit, Mich., have added to the 1912 Perfection motor a Perfection igniter, which requires only one wire for the whole ignition system, there being nothing to get out of order. The Caille Co. claim that this combination of motor and igniter make a trouble-proof heavy-duty power plant for fishing boats, oyster boats, work boats and all kind of craft that have to contend with severe weather conditions. Their 8 H. P. single cylinder engine for 1912 simply thrives on hard work, and for boats that must be used every day in the year in both fair and foul weather it is a simple, durable and efficient power plant. The Caille motor is a two-cycle engine made in sizes from 2 to 30 H. P. and from one to four cylinders making from 600 to 1000 R. P. M.

Hartford Motors.

The Gray & Prior Machine Co., of 656 Suffield St., Hartford Conn., in putting out their line of 2-cycle engines claim for the 1912 model a general refinement in design and finish. These engines are made in from 3 to 20-H. P. in both single and double-cylinder model.

The engines have split adjustable bearings made in halves, are closed base and use a gravity oiling system. The Ball reverse made by the New York Gear Works is used with the Hartford engine.

Special attention is given to testing Hartford motors before they are placed on the market and every one of them turned out must come up to the most rigid requirements and stand the minutest examination. The horsepower of these engines is guaranteed by the Gray & Prior Machine Co. Special attention and care are given to workmanship and only the best materials are used.

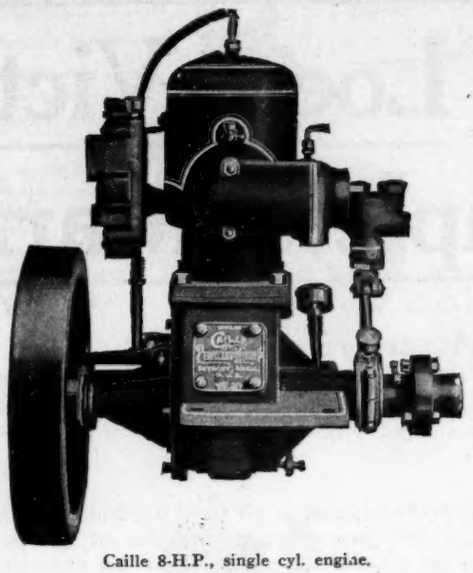
Cragg Marine Motors.

The Gilmore-Cragg Motor Mfg. Co., of Detroit, Mich., are placing on the market for 1912 a line of 2-cycle motors from 1½ to 36-H. P.

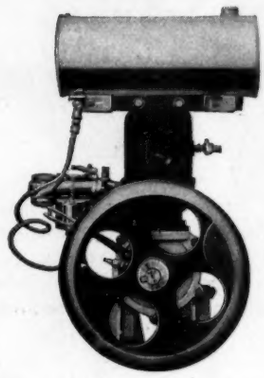
Sizes. The smaller engines come in 1½-H. P. 1-cyl. and 3½-H. P. 2-cyl.; the latter with the fly-wheel either forward or aft of cylinders, as desired. These are a 3-port engine. Prices from $37 to $75. In the 2-port motors the sizes run 4½, 6-7 and 9-10-H.P. Single cylinder; 8-10, 10-14, and 18-20-H. P. 2-cyl. and 18-20 and 30-36-H. P. 3-cyl. Prices $90 to $470. Range of speed 600 to 800 R. P. M.

They are a jump-spark engine, the spark plug being in the center of the cylinder head where the charge gets the full effect of the spark, eliminating to a great extent the errosion of the spark plug. There is a complete vibrating spark coil and switch mounted on the spark plug without any secondary wiring giving a very hot spark at low battery consumption. It fits any plug; is easy to install and remove and does away with unsightly wiring as it requires but one wire for primary circuit. Mistakes in connecting up are impossible, and it is proof against water, heat or carelessness.

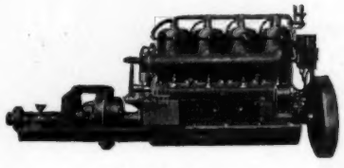
The Gilmore-Cragg Co. expect every customer to try his Cragg engine in his boat for thirty days. If in that time it proves to be not as represented, he has the right to return it to the factory. They will immediately put it in the hands of experts to see what the trouble is and will, at his option, either send back the purchase price or an engine which does equal their representations, as soon as they find that the engine is at fault. This trial offer is a part of contract with each engine purchaser.



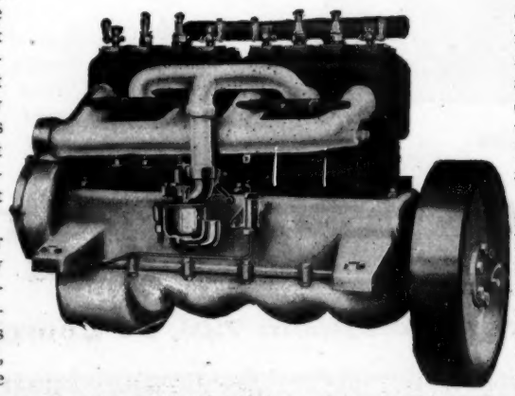
Caille 8-H.P., single cyl. engine.



Waterman new outboard or Porto motor set up for stationary work.



4-Cyl. Doman motor.



4-cyl. 4-cycle Kermath motor, 10-12-H.P., weight 330 lbs.

Waterman Motors.

The Waterman Marine Motor Co., 1541 West Fort St., Detroit, Mich., manufacturers of 2-cycle high speed engines are making a new model Outboard motor which will be ready February 1st. The regular line of high speed engines which the Waterman Co. manufacture is from 1½ to 30-H. P. in one, two and four cylinders, three models of each type. This new Outboard or "Porto" motor is the first change in design of this model since 1906. The engine may be taken apart and used for stationary work or made into a dirct connected pumping plant. It is an all-around general utility engine.

The 1912 model B has had the power slightly increased without any increase in weight. The regular models are a closed base engine using Ball reverse gear on the large sizes, and are lubricated through the fuel supply.

The prices range from $40 to $450.

Doman Motors.

Among the additions for 1912 to the line of Doman motors, manufactured by the H. C. Doman Co., of Oshkosh, Wis., is a 6 by 8-inch heavy duty engine made in 1, 2, 3 and 4-cyl. sizes.

Sizes. The regular Doman line consists of heavy, medium duty and high speed, 4-cycle engines from 6 to 100-H. P.; 2 to 6 cylinders. They are a closed base engine with jump spark ignition and Detroit force feed oiling system with splash to base. Paragon reverse gears are used and are a part of regular equipment of Doman engines.

The Doman Guarantee. Doman marine motors and engines are guaranteed by the H. C. Doman Co., to be constructed of the best material throughout and to be in perfect working order when they leave the shops. If they fail in either of these particulars, the Doman Co. say they will replace the motor or engine, bearing all the expense attached thereto, or refund the money.

The New Kermath Marine Motor.

The 4-cyl., 4-cycle motor has been developed by automobile manufacturers into a perfect power plant, and is now the standard in 95 per cent. of the cars. The general use of automobiles has familiarized motor boat owners with this type of engine, and its admirable qualities of reliability and flexible control have inspired confidence. There has, as a result, arisen an insistent demand for a high-grade, 4-cyl., 4-cycle marine motor, at a reasonable price. The Kermath is designed and manufactured with a view to meeting this demand.

While the general principles of automobile engine construction have been followed (because the correctness of those principles has been demonstrated), the manufacturers of the Kermath have not made the common error of assuming that an engine designed primarily for automobile use possesses the necessary features of construction to insure its satisfactory operation under strenuous motor boat service. The Kermath is essentially a marine, rather than an automobile motor.

Comparing its weight, 330 pounds, with its rating, 10-12-H.P., at 800-1,000 R. P. M., there is no huskier marine motor on the market. Its 1⅜-inch crankshaft, 1¾-inch valves, long pistons, 9-inch connecting-rods, three long main bearings, enclosed tappets and valve-stems, its simple and efficient lubricating system, and conservative, "classy" design, are features calculated to meet the approval of the most critical gas-engine expert.

Mariners, Ahoy!

ON or soon after February 1st, 1912, our ship will ride anchor 1,000 feet north, ¼ west of the old mooring. Just as before, we want you to hail us or come alongside at any time or in any weather and let us give you a hand on anything you need from truck to keelson. Remember the new number, 430-440 WELLS STREET, corner of MICHIGAN STREET. We shall have there three times the space we had at the old mooring—and three times the ability to handle your orders.

Here's wishing you a fair wind and a smooth sea for 1912. Send 20c. in stamps to cover postage on our

500-Page Marine Supply Catalog No. 101 *and* 1912 Supplement and Discount Sheet

It will pay you to get our catalog. It is full of valuable information as to the care and operation of all kinds of boats. Your 20 cents will be refunded on your first order.

GEO·B·CARPENTER & CO.

Present Address: Fifth Ave. Bridge, Chicago, the Great Central Market

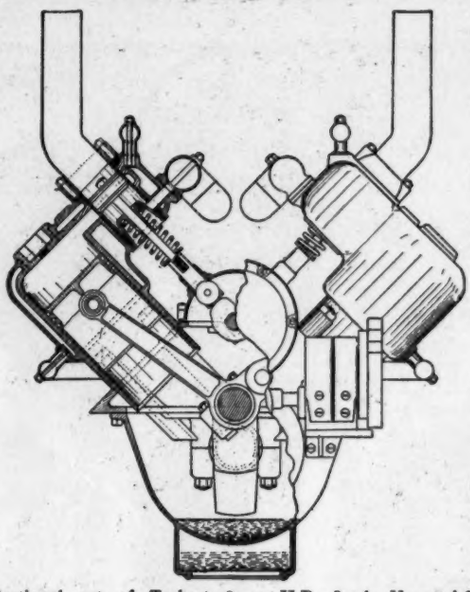
The Morton Motor Company have gotten out a very attractive booklet concerning their motor, and containing a strong argument for taking to the water for pleasure. It is a beautiful piece of work and will be sent free to anyone writing for it. Address, Morton Motor Co., 47 E. Fort St., Detroit, Mich., and mention YACHTING.

Trebert Racing Engines.

The H. L. F. Trebert Engine Works of 495 St. Paul St., Rochester, N. Y., builders of marine and aeroplane high speed engines have added to their line for 1912 a 4 and an 8-cylinder piston valve engine, designed especially for racing boats, as well as a 6-cyl. 4-cycle valveless revolving aeroplane engine which is designed for marine purposes.

The regular line consists of four 6-cyl. vertical 4-cycle engines, ranging from 40 to 90-H. P.; and 4-cyl. vertical and 8-cyl. "V" type in from 40 to 80-H. P.

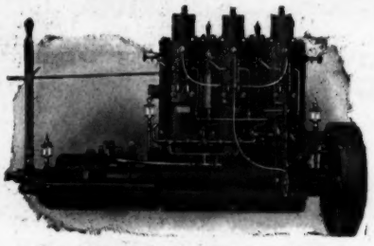
The cut accompanying this shows the 8-cylinder "V" type special piston valve racing engine of 80 to 100-H. P. weighing but 540 lbs. complete. The extreme width of this engine is 26½ inches; between keelson for foundation, 14½ inches; extreme length 45 inches including reverse gear, and 27 inches across cylinders with 7 inches from center of shaft to bottom of oil pan. It is a fine looking piece of work and will be sure to interest all users of high speed boats.



Sectional cut of Trebert 80-100-H.P. 8-cyl. V special racing engine.

Emerson Engines.

The Emerson Engine Co., of Alexandria, Virginia, makers of high-speed light weight engines show a number of added refinements in their engines for 1912. The Emerson engines last year made a reputation in speed craft, among the fastest boats which they powered being the 20-footer Sand Burr, Pee-Vee-Ho and others. They make a light weight engine, 100-H.P., 6-cyl., weighing 325 lbs., 4-cylinder 60-70-H.P., 225 lbs. The sizes run from 8-10-H.P., 2-cycle, single cylinder to 100-H.P., 4-cycle, 8-cylinder 7½-inch bore x 8 inch stroke. The Emerson Engine Co., are catering to the highest grade engine trade in America. To do this they employ skilled mechanics, many of whom are gun makers, having spent years in the Government gun shops.



3-Cyl. Mietz & Weiss kerosene engine.

Mietz & Weiss Kerosene Engines.

August Mietz is the manufacturer of the Mietz & Weiss oil burning engine, in all sizes from 2 to 600-H.P., the Mietz & Weiss engine being one of the first kerosene engines on the market and has earned a place for itself as one of the most reliable kerosene burning engines made. It is particularly serviceable for good sized boats where large horsepower, reliability and durability are required. In the 2 to 60-H.P. engines reversing gear is used, while the sizes from 75 to 600-H.P. are of the reversible type of engine. It is simple, safe, reliable and economical and has automatic ignition, and can be operated either on kerosene, cheap fuel oils or alcohol.

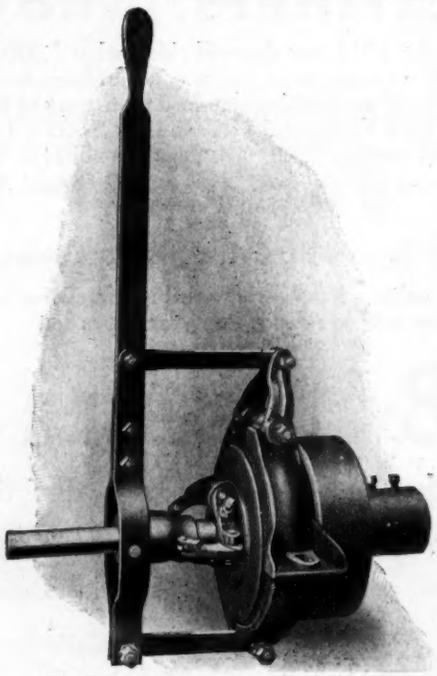
Accessories at the Boston Show and New Models for 1912

Ball Reverse Gear.

The New York Gear Works, 55 Greenpoint Avenue, New York City, are makers of the Ball Reverse Gear which is used on a large number of engines. This is an all-spur planetary gear, this Company being the inventors and being the first to build and operate a reverse gear of this type. They will be seen on many engines at the show.

The New York Gear Works carry four sizes as follows:

The Yankee Co.'s expansion silencer or muffler.



The Ball all-spur planetary reverse gear.

LOW SPEED MOTORS.

No. 1 Gear	will transmit	5 H. P. at 500 R. P. M.
No. 2 Gear	" "	8 H. P. at 500 R. P. M.
No. 3 Gear	" "	12 H. P. at 500 R. P. M.
No. 4 Gear	" "	16 H. P. at 500 R. P. M.

HIGH SPEED MOTORS.

No. 1 Gear	will transmit	20 H. P. at 1000 R. P. M.
No. 2 Gear	" "	30 H. P. at 1000 R. P. M.
No. 3 Gear	" "	40 H. P. at 1000 R. P. M.
No. 4 Gear	" "	50 H. P. at 1000 R. P. M.

Larger sizes will be built to order. All these gears are made of the best grade material for this particular purpose, are box-hardened by the most approved method, and bearing surfaces are ground. The prices range from $23 to $60. Separate parts can always be bought singly.

Yankee Muffler and Whistle Outfits.

The Yankee Muffler Co., of Utica, N. Y., are exhibiting at the Eastern motor boat shows their improved line of "Yankee" mufflers and whistle outfits for motor boats. The Yankee mufflers are made of galvanized sheet steel, asbestos lined, and re-lined with galvanized sheet steel. There are no complicated parts to become clogged that can work loose or get out of order. All their mufflers are water-tight, so that the circulating water may run through to cool and to help deaden the noise. The Company claims there is absolutely no back pressure.

The "Yankee" whistle outfits pass Government inspection and comply with the U. S. Laws relating to motor boat equipment. They are easily and quickly attached to any gasolene engine. The mufflers range in price from $3.00 to $6.50.

Paragon Reverse Gears.

Among the many articles of engine equipment that are attracting the attention of motor boat bugs is the Paragon reverse gears exhibited by the Evans Stamping and Plating Co., of Taunton, Mass., in space 105.

The company has added two new models for 1912 (G and H) which are built to order for large engines carrying heavy loads.

On the forward drive of the Paragon gear, a multiple disc clutch is used, and when lever is thrown forward, the whole device revolves as a solid coupling without wear on any parts. On the reverse, the brake band clamps the case and the drive is direct through four pinions to an internal cut propeller gear.

The Evans Stamping and Plating Co., call particular attention to the high grade workmanship and material which go into their reverse gears.

Price $25 to $175.

The Sta-Rite Spark Plug.

The R. E. Hardy Co., of Chicago, Ill., manufacturers of motor accessories, are exhibiting in the basement, a line of their Sta-rite spark plugs consisting of the Venus, Vulcan and Gotham models, both in porcelain and mica construction, in standard sizes. In the Vulcan double porcelain the contraction and expansion is uniform and cap protects inner heated tube. The Venus is a mica plug constructed with solid bolts from Bessemer steel rods which do not stretch, and mica which does not loosen. The Gotham is a hollow single porcelain plug with a partly closed end which protects the porcelain tube. Retail price $1.

Detroit Force Feed Oilers.

The Detroit Lubricator Co., of Detroit, Mich., makers of force feed oilers for marine engines, have added a number of minor refinements to the parts of their well known oilers for this year.

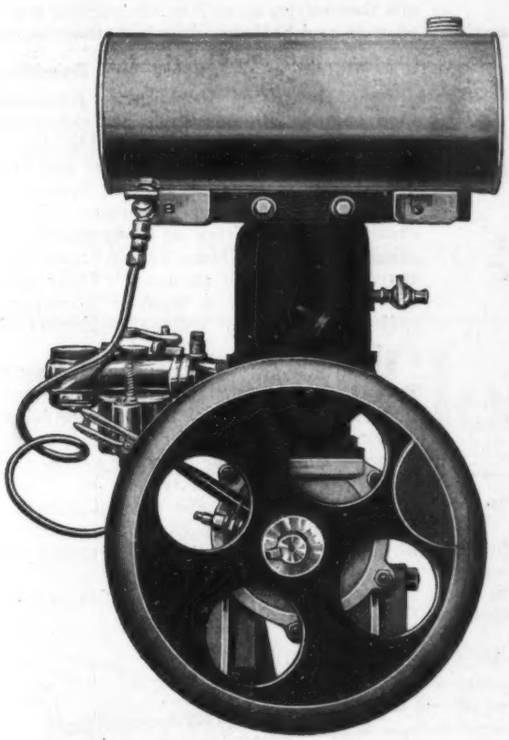
The Detroit Force Feed Oiler consists essentially of one or more pumping units—one unit to each feed—actuated by a driving shaft. The en-

HERE is the handiest little Marine Motor ever conceived—the original PORTO MOTOR, famous the world over and now adapted for also running a hundred different small machines ashore. Simple—light—strong—the greatest power per pound of weight that any motor has ever offered.

Makes A Motor Boat of *Any* Boat in Five Minutes and also "Makes Good on Shore"

In less than FIVE MINUTES you can slip this two horse power engine on the stern of an 15 ft. row-boat and it will drive it seven miles an hour, for four hours on ONE GALLON of gasoline.

In FIVE MINUTES you can take it off again, fasten it to the portable base and slip on either the belt pulley or the pump jack and you have a stationary engine for you machine shop, your laundry, your barn, your garage or any other place desired.



It will saw wood, pump water, turn a lathe, work an air compressor or drive a small dynamo. It will run an emery wheel or a feed cutter. With the Rotary Pump which we supply if desired, at a low figure, it will give you a water works system for your summer home and furnish fire protection as well. Pumps 25 GALLONS A MINUTE. Its uses are too numerous to mention.

Complete Equipment as Follows:-

For Marine use regular equipment includes propeller, rudder, steering gear and muffler. For stationary use either belt pulley or pump jack and portable base. Rotary pump—a dandy for Bilge-pump at a right price. You can have any or all this equipment at low cost.

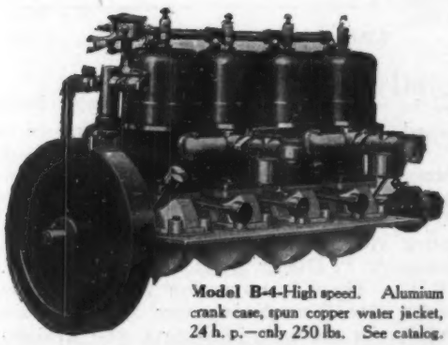
SOLD ON 30 DAYS FREE TRIAL

Write quick for our new "Two in One" Catalog, mailed free. Orders filled in order of receipt.

WATERMAN MARINE MOTOR CO.

1541 W. Fort St., Detroit, Mich

Agents-Dealers—Here is the livest proposition that ever coined you a dollar—it will coin you money if you act promptly. Some good territory left. Write or wire.



Model B-4-High speed. Alumium crank case, spun copper water jacket, 24 h. p.—only 250 lbs. See catalog.

Model K-1 and Outfit-2 h. p. for any paddling canoe or small boat. Engine and entire outfit weighs only 55 lbs.

Two in One

The New Waterman "PORTO MOTOR"

On or Off in Five Minutes

Detroit lubricator, 4-feed force feed oiler with ratchet drive.

tire mechanism is contained in the tank or reservoir. Each pumping unit consists of a double plunger valveless pump. One plunger pumps the oil from the reservoir through the sight feed nozzle from which it drops in plain sight, and the other plunger takes the oil from the sight feed chamber under the nozzle and forces it to the part to be lubricated.

There is a Detroit Force Feed Oiler for every kind of gas engine—marine, stationary, automobile, aeronautical and gas tractor.

They are made for either standard pulley drive or ratchet drive, and in all sizes from one to twenty-two feeds, and tank capacity of from 3 pints to 14½ pints. Prices range from $10 to $82.

Havoline Oil for the Motor.

In space 93 the Indian Refining Co., of 17 Battery Place, N. Y., are exhibiting a line of their marine motor oils and greases of the well known Havoline brand. Descriptive literature of the value of oils of the proper viscosity and the elimination of carbon is also to be had at this booth.

Spray Hoods and Boat Tops.

Charles P. McClellan, of Fall River, Mass., is exhibiting in space 9, on the main floor, a line of canvas boat tops, spray hoods and cushions for motor boats.

The Auto Boat Tops made by this firm answer the same purpose on motor boats that an automobile top does on a motor car. The covers and tops are made in 15 oz. government khaki duck warranted water and mildew proof, while the spray hood is made of 12 oz. duck.

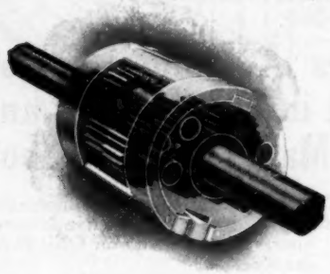
These come in sizes of 4 bows, 5 bows and 6 bows. The spray hoods come in three styles and may be used as a combination spray hood and awning or boat top. All models have the McClellan Safety Handling Device.

Johnson Reverse Gears and Clutches.

The Carlyle-Johnson Machine Co. show in space 75A a line of their Johnson reverse gears and friction clutches. This firm have added to their line a new gear of an entirely different construction, with which they have been experimenting for several years, and after having tested thoroughly in actual installations in their own boats for two years, are now preparing to manufacture on a large scale for early delivery.

The New Johnson Gear is radically different from the many makes now on the market, which are mostly of the planetary type. Like all their previous designs this gear is completely encased, as a protection against sand or grit getting into the working parts, and as a precaution against oil or grease being spattered about the boat. As a further means of preventing this last trouble, the main shaft bearings are fitted with stuffing boxes, on each end of gear case.

The first illustration shows in perspective a nest of spur gearing, incorporated within a clutch body or gear cage, on each end of which are mounted clutch members of the well-known Johnson type of clutch. These gears run on four hardened shafts; each end of which is supported in the ends of the gear cage. The gears are always in mesh with the engine and propeller shaft pinions as shown, and the latter extends to the right and the former to the left, each being supported in bronze bearings in the ends of the gear cage, and extending through far enough to allow of coupling.



Nest of spur gears, Carlyle-Johnson reverse gear.

Carlyle-Johnson double clutch in its casing.

The gearing and shafting are small in diameter, in order to keep the construction compact, but are made of vanadium steel, oil treated, thus giving these parts the strength of a cast iron or machine steel gear several times as large.

In the second illustration is shown the double clutch in its casing, with reverse gear handle.

An Automatic Bilge Pump.

The Aaron Automatic Bilge Pump Co., of 171 Westminster St., Providence, R. I., have in actual operation one of their bilge pumps attached to a gasolene engine, pumping water.

The Aaron Automatic Low-Pressure Pump, as its name implies, requires in its installation, no shafts, gears, belts or any moving parts. It may be attached to any motor, using circulating water to cool its cylinders, wherein the pumps create a pressure of 10 pounds or more. It is operated by connecting it to the discharge water pipe, through which the overflow of the circulating water passes. By the passage of this overflow water through the pump there is automatically created a suction of sufficient force to gather up the bilge water, and by means of a pipe to discharge it overboard.

One of the great conveniences of this pump lies in the fact that it is entirely automatic and requires no attention. When there is any water in the bilge it pumps it out, and after the bilge is dry it stops working until some more water accumulates.

With a pressure of 15 pounds, 1 gallon of water per minute is the rate of the discharge on the smaller sizes.

Having no moving parts it is noiseless (a great advantage in itself), and in addition, will draw off any gasolene fumes from the bilge, where they may collect. It may also be used for washing down the boat. New sizes are being made this year in 1¼, 1½ and 2-inch for engines up to 500-H. P.

The prices range from $20 to $75 complete.

Wolf's Head Marine Motor Oils.

The Wolverine Lubricants Company of New York will occupy space No. 329 at the Boston Motor Boat Show where they will exhibit a full line of Wolf's Head Marine Motor Oils and Greases, as well as a full line of their Wolf's Head Crystal Oils. The display will show the oils themselves, as well as the various trademarked cans and packages in which they are sold.

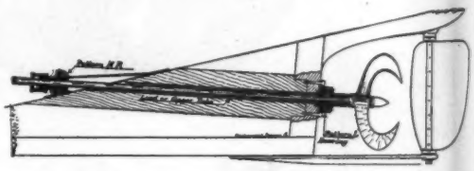
Motsinger Magnetos and Dynamos.

Those interested in Ignition Equipment for their engines will tarry over the exhibit in space 17-B of the Motsinger Device Mfg. Co., of Lafayette, Ind., makers of Magnetos and Dynamos.

The company makes a Low Tension Direct-Current Magneto, and dynamos of sufficient capacity to carry from 20 to 30 candle power in miniature electric lamps, aside from necessary current for ignition purposes. Their generators are equipped with a positive governor which maintains a constant voltage, regardless of speed of engine.

The Motsinger Company are offering to boat owners a very complete and effective generating plant, consisting of a small but powerful dynamo, a volt storage battery of 80 amperes capacity and a compact and reliable charging switch with high-grade voltmeter connected to it. Their outfit will furnish ignition for a multi-cylinder engine—either make-and-break or jump-spark—as well as give ample current to run the sailing and cabin lights of a 40-foot cruiser.

The retail prices range from $10 to $16.



Shaft log and automatic stuffing box of the Mechanical Devices Co.

For Aligning Shaft and Motor.

Anyone who has installed his own engine and realized the importance and the difficulty of getting shaft and engine in proper alignment will appreciate the automatic aligning couplings and stuffing boxes exhibited by the Mechanical Devices Co., of Watervliet, N. Y., in the space of A. P. Homer, 55-57, on the main floor.

There is no excuse for burning out bearing now through improper alignment since a device made by this firm, the Walters Flexible Shaft Coupling—has come into use. This device works at an angle, just like a universal joint,

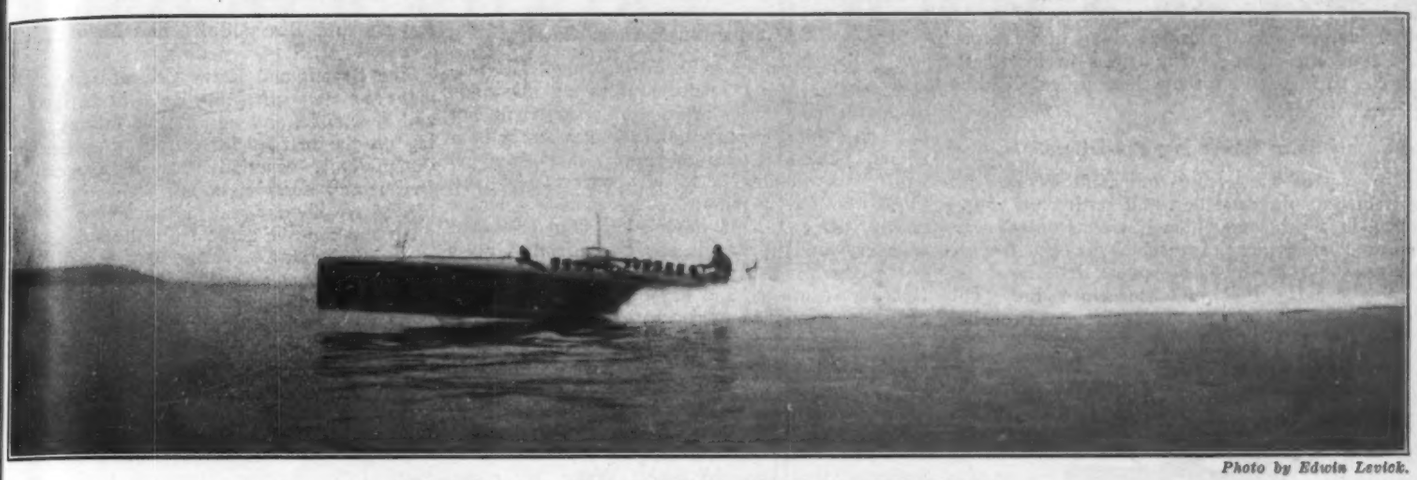


Photo by Edwin Levick.

THE DIXIE IV. THE FASTEST BOAT IN THE WORLD

"DIXIE JUNIOR"

Will be the fastest 20-footer the world has ever seen.

35 Miles Guaranteed

or no sale

Designed and Guaranteed by

TAMS, LEMOINE & CRANE

Designers of all the famous Dixies,

and Built by Staten Island Shipbuilding Co., Builders of Dixie IV.
Equipped with a special 45-65-H.P. STERLING MOTOR.

Completed boat on exhibition at New York Motor Boat Show

FULL PARTICULARS FROM

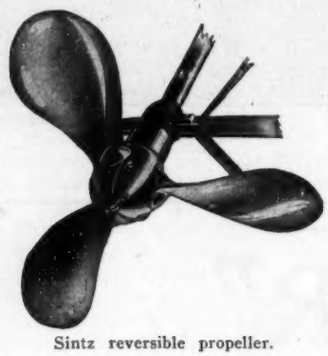
Tams, Lemoine & Crane, 52 Pine Street, New York. Sterling Engine Co., 1254 Niagara St., Buffalo, or their Agents.
Staten Island Shipbuilding Co., Port Richmond, N. Y.

Consult YACHTING'S Information Department on any of your problems. Its service is absolutely free.

and works equally well even if the two shaft ends are badly off center, either vertically or horizontally. When used in connection with an automatic aligning stuffing box and an adjustable shaft hanger it is the easiest thing in the world for even the most inexperienced to install the engine and shaft so that there is no binding, friction or trouble.

Sintz Reversing Propellers.

No part of the engine equipment is more important than the propeller, and getting the proper wheel is a problem which has confronted every motor boat owner; for which reason the exhibit of Wilmarth & Mormon, 611 Canal St., Grand Rapids, Mich., will bear close study. This concern make the Sintz Reversing Propeller,



Sintz reversible propeller.

seven styles of solid wheels and Sintz Timers, a line of which is shown at this exhibit.

Wilmarth & Mormon claim for their reversible propeller a strength equal to that of a solid wheel, perfect control and maximum speed. The sizes run from an 8-inch two-bladed wheel up to a 5-foot three-bladed propeller. The prices range from $18 to $505.

Valspar Varnish, for Salt and Fresh Water.

Valentine & Company, one of the oldest varnish houses in the world, having been founded in 1832, turned their attention a few years ago to a complete review of the old problem of making varnish resist water. Thousands of laboratory experiments were made extending over a period of five years, resulting ultimately in complete success, as an examination of their exhibit in space No. 59 will show.

The new product was called Valspar and its invention has greatly affected the spar varnish field. Until recently every boat owner expected to revarnish two or three times every season, and the use of varnish on vessels was thus kept to a minimum for the sake of reducing cost. It was taken for granted that no varnish could withstand water very long and boat owners looked on with complacency when their varnished deck fittings turned white after a rain.

Valentine & Co. demonstrated that Valspar will not turn white in water, hot or cold, fresh or salt. If a dinghy, varnished inside with Valspar, is allowed to fill up with water from a rain, there will be not even a water mark after bailing to show where the Valspar has been immersed.

The central feature of the Valspar exhibit at the show is a glass tank of water showing the now famous Valspar submarine. A model submarine is varnished on alternate belts with Valspar and various other popular spar varnishes. At the beginning of the test the boat is a smooth, shiny black from stem to stern with nothing to indicate the location of the Valspar sections. After a few hours in the water all the varnish except the Valspar turns whitish and ultimately a dead white, while the Valspar sections remain black and brilliant.

Geo. B. Carpenter & Co's. Catalog

Geo. B. Carpenter & Co., of Chicago, Ill., marine outfitters and manufacturers of all kinds of motor boat accessories, while they will not have an exhibit at any of the Eastern motor boat shows, publish a marine supply catalog which will prove invaluable to all boat owners and those who follow the sea. This catalog contains nearly 500 pages of description and price list of every kind of marine appliance, from a glass port light or carburetor to the most intricate steering apparatus, and has besides a number of chapters devoted to the operation and installation of marine engines; rigging and handling of boats; rules of the road, and the overhauling of boat and engine.

The wonderful growth of the marine and motor boat supply business of this firm in the last few years has resulted in such an increase in business, that the old South Water St. store, which has long been a landmark in Chicago, is no longer adequate to meet their needs, and the Company announces that they have abandoned the old store and are now in larger quarters on the corner of Wells and Michigan Sts., Chicago. The new premises occupy about half a city block, with a floor space of 150,000 square feet.

Shipmate range for yacht use.

Shipmate Ranges.

All those who go to sea in a cruising yacht are vitally interested in the galley outfit, and particularly in the stove, realizing that a contented crew, whether amateur or professional, is one that is well fed. There is no question that for all around use on ship board nothing has yet been found to take the place of the ship range, because you can keep a fire in it at all times, and it has to be bad weather, indeed, when you cannot keep the pots and pans on it.

The Stamford Foundry Co., of Stamford, Conn., make a specialty of ranges for ship and yacht use, making no less than eight sizes and eleven different styles of their famous Shipmate range. These sizes run from a little 2-hole yacht range 20¾ inches long by 15 inches wide and 23½ inches high, to the big 5-foot range for use on steamships or large vessels. These are made entirely of cast-iron and are built to burn either coal, wood, charcoal or coke as fuel and are efficient for all kinds of cooking under any conditions. They not only fulfil their purpose for keeping the inner man content, but in cold and damp weather they keep the body comfortable by providing a place to dry wet clothes and keep the inside of the boat from damp and wet.

Their little booklets called "Shipmates" and "Around the Galley Stove" make excellent reading and are good reference books which eve yachtsman will be interested in. They may had for the asking.

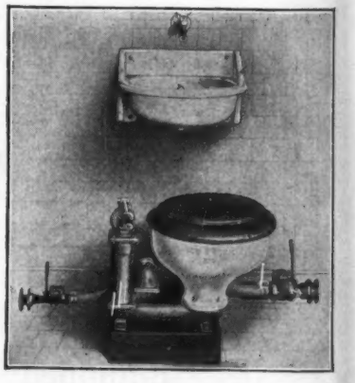
Bryant and Berry Solid and Reversible P pellers.

The Bryant and Berry Co., of Detroit, Mi manufacturers of propeller wheels, both so and reversible, and motor boat fittings, are pl ing on the market for 1912 a propeller of n design built especially for high speed bo Bryant and Berry claim for their wheels that blades are so designed as to give a differen pitch and concave curve from the hub to the e of the blades, the object being to lessen the po bility of an air pocket forming on the forwa side of the propeller. This reduces the perce age of slip by having the driving side of the p peller work from the hub to the end of the bla These propellers are made in all sizes to fit a size and type of craft.

Pyrene Fire Extinguisher.

The Pyrene Company of New England, of Federal St., Boston, Mass., is located in spa 91, where they have an assortment of their w known fire extinguishers which have proved th worth during the last few years. The Pyre Co. claim great effectiveness for their ext guisher on gasolene, oil, benzine, calcium c bide, etc. These extinguishers come in the t of a squirt gun with a nozzle at one end a handle at the other, so that they can be aim and discharged upon a fire at a considera distance. The machine is ribbed, giving gr strength, and convenient to handle. It comes three designs, nickel plated, brass and enamel metal, the prices being $8, $7 and $6 respectiv

Pyrene Liquid is a combination of power gases in liquid form, absolutely devoid of mo ture, thus rendering it a non-conductor of el tricity. When the liquid is brought into cont with a temperature of 200 degrees or over it instantly converted into a dense white g blanket, about five times as heavy as air, whi surrounding the fire, destroys the oxygen pre ent and excludes fresh oxygen, thus extingui ing the fire. Pyrene Liquid is extremely volat and leaves no residue.



Diem complete toilet room outfit for small boats

A Complete Toilet Room Outfit.

Gus A. Diem, 20 Fulton St., New York, placing on the market this year at a popul price to individual boat owners, a toilet-roo outfit, for the small boat, consisting of a Fult Raceabout yacht closet and a porcelain wa basin for fastening to the bulkhead with fau and nickel plated attachments complete. Th makes a very neat outfit and the price for wh he sells it, $40, makes it very attractive for t man who buys his own plumbing.

WICKER CHAIRS

that are
LIFE PRESERVERS

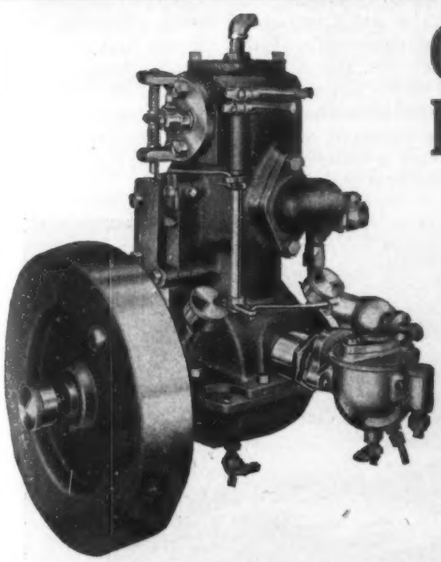
The chair illustrated in this advertisement can be fitted with a *life-belt*. These chairs are creating a sensation with the Yachting public.

Tables, Tete-a-tetes and Steering Chairs

Special work to order

Write for catalogue and full information.

WICKER-KRAFT COMPANY
13 S. Water St. - NEWBURGH, N.Y.



OUR LEADER

1½ H. P. EAGLE ENGINE

$60.00 Complete

Equipment includes: Schebler Carbureter, Oil Cup and Grease Cups, Bronze Propeller Shaft and Propeller, Stuffing Box, Inboard Water Connection, Insulated Cable, Switch, Coil and Batteries, Expensive Tool Kit, ALL FOR SALT WATER USE.

Do not forget that "EAGLE" Engines are made in 14 other sizes. Send for illustrated catalogue.

THE EAGLE CO.
98 WARREN STREET NEWARK, N. J.

DYNAMITE

offers more power for its weight and bulk than gasoline, but, until high-power explosives are more easily controlled, gasoline and Elbridge "Featherweight" Engines will continue to head the list in the motor boat field where extreme Power For Weight is desired. In power plants for

Yacht Tenders

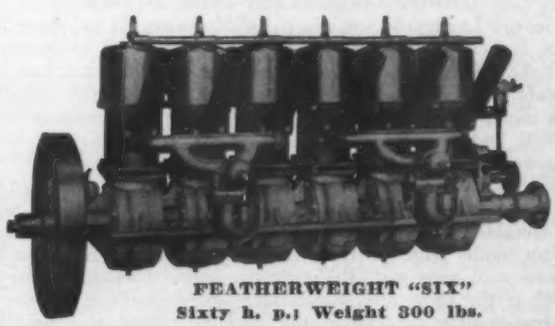
The Elbridge Engine Company offers the finest line of motors from 3-H.P. to 20-H.P. ever produced. Not cheap like makeshifts, but finely designed, perfectly equipped little power plants. The 10-H.P. Baby Featherweight, to take an extreme case, weighs 60 lbs! For salt water work it weighs 78 lbs. How can we do it? Simply by spending three years learning to build the most popular and successful aeroplane motors made in America.

V-Bottoms

are popular boats this year. Staunch and seaworthy, they are remarkably fast when fitted with power plants designed particularly for them. Elbridge Type "C" engines, ranging from 10-H.P. to 40-H.P., come with all essentials to V-bottom comfort—Bosch magnetos, Schebler or Automatic carbureters; rear starters.

Hydroplanes

as well as hydro-aeroplanes (the racers of next year) are successful only through the "power for weight" engine. Elbridge "Featherweight" Engines were the pioneers in the field of light-weight, high-speed, 2-cycle motors. Give us your power problem; we'll gladly supply the figures and our catalog for the asking.



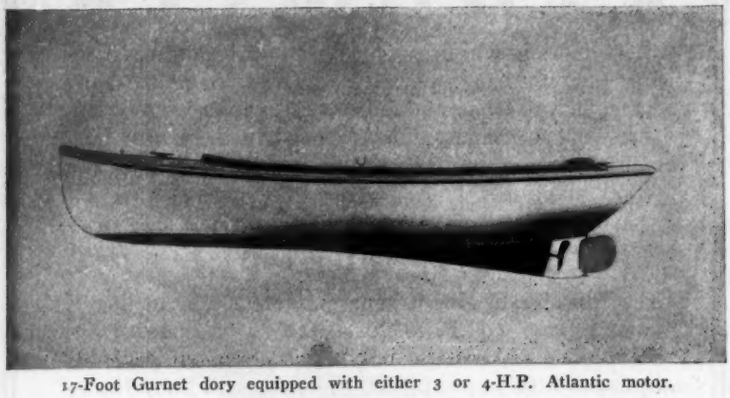
FEATHERWEIGHT "SIX"
Sixty h. p.; Weight 300 lbs.

ELBRIDGE ENGINE COMPANY
22 Culver Road, Rochester, N. Y.

BRUNS, KIMBALL & CO.,
New York Representatives 132 Liberty Street.

Review of Complete Boats and Boats and Engines

Exhibited at the Boston Show. Also Other New Models for 1912.



17-Foot Gurnet dory equipped with either 3 or 4-H.P. Atlantic motor.

Atlantic Dories and Launches.

The Atlantic Company's exhibit in spaces Nos. 26, 27 and 28 includes a complete line of their characteristic Gurnet dories, and while not many noticeable changes will be seen since last year, the critical observer will first notice on the 25½-foot dory the flaring bow which will make for increased dryness and also see that the stem is somewhat more plumb than heretofore, thus increasing the waterline length and displacement.

Sizes.—The Gurnet dory is built in lengths of 18½, 20½, 23½, 25½ and 30½ feet, and in addition to this complete line of family boats there will also be shown a 16-foot Gurnet dory skiff and a 17-foot Gurnet dory launch, both new designs for 1912—real boats of real ability in seaworthiness and passenger capacity to give the boat buyer of modest means an opportunity of satisfying his desire for a thoroughly first class outfit at a price from $180 up.

The 25½-foot and 30½-foot semi-speed clippers which have been so popular with the boat-buying public, will also be shown, and the 30½-footer with a flared bow will be sure to attract favorable attention.

Additionally it is expected that the Atlantic Company will exhibit a fast runabout—28 ft. x 4 ft. 11 in. equipped with their 20 to 30-H.P. 4-cylinder 4-cycle Atlantic Chester motor. Those who have seen the plans for this boat predict a great future for it as a fast runabout for family and ferry service—seaworthy for offshore use if that is desired, and the unit power plant in which the engine is made complete with reverse gear and rear starter on one bed, promises to be a very convenient feature, admitting very simple bulkhead control, the boat being handled entirely by one man, as an automobile.

Lawley Launches and Yacht Tenders.

The George Lawley & Son, Corp., of Neponset, Mass., have a fleet of runabouts, launches and yacht tenders in spaces 37 to 40 inclusive. The largest of these is a cruiser of heavy type, 31 feet long, 7½ feet beam and with a draft of 3 feet. She will be equipped with a single-cylinder Craig engine of about 8 H.P. This is an ordinary type of cruising launch and is well built and solidly constructed and should fill the bill for anyone wanting a comfortable boat for cruising and outside work.

There is also a mahogany trimmed runabout, 30 feet in length by 5 feet 6 inches beam, which is a representative of one of this firm's high grade launches suitable for harbor, river or lake use. She is of the usual type of runabout model which is indigenous to Eastern waters. The boat will be equipped with a 25-30-H.P. Sterling engine. She makes an excellent appearance at the show and will attract much attention. There are also two or three power tenders of the type for which this firm has been noted. The workmanship of these boats is the usual Lawley high grade, and they are a craft which appeals to buyers wanting a tender for their sailing yachts or to carry on davits on steam yachts.

Kershaw-Williams Boats, Propellers and Engines.

The Kershaw-Williams Co., of 29-33 Haverhill St., Boston, Mass., occupy spaces No. 20, 21, 22 and 23, this space being sub-divided and occupied by the product of the various concerns whom this company represents, including Rice Bros. Co., Roper Safety Propellers and Fulton Mfg. Co., whose exhibits are described separately.

The company show their own 25-foot bright cedar, mahogany finished, runabout, equipped with 40-H.P. Erd Special, light weight, high speed motor, with a guaranteed speed of 22 miles per hour. The price is $1,400 Also a 20-foot family launch, equipped with Fairbanks-Morse two-cylinder, 7-H.P. motor for $500.

They are also the agents for the Erd Motor Co. and show a complete line of Erd and Erd Special Motors, both 2-cycle and 4-cycle, from 3½ H.P. to 60 H.P.

Toppan Boats and Dories.

The Toppan Boat Mfg. Co., of Boston, Mass., exhibit the following boats in spaces 33 and 34; one 26x7-foot raised deck cruising launch, equipped with 8-10-H.P., 2-cyl., Toppan engine. This boat is similar to the well known Toppan Offshore Dory Cruiser, except that it is a keel boat, and has a large lounging deck aft. This launch has sleeping accommodations for four people in the cabin, has a toilet, galley and full lockered seats. It is finished in oak, natural finished, painted white outside with green under body.

Another boat this company makes is a 30x8-foot raised deck cruiser equipped with 12-14-H.P. Toppan engine, toilet, galley, full lockered seats, etc.

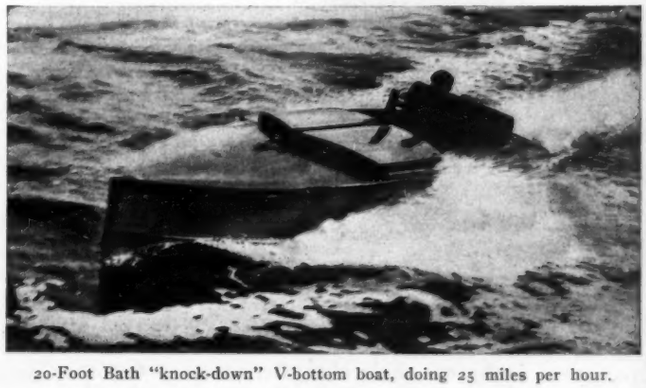
The Toppan Co. also exhibit one of their 18-foot standard dories, equipped with 3-4-H.P. Toppan motor. This is one of their regular service boats, with pine decks, oak coaming, and all decks, coaming, tops of seats, locker tops and all such parts finished in the natural wood properly filled and varnished. Another attractive boat exhibit is the 18-foot Toppan Safety Launch, equipped with 3-4-H.P. Toppan engine with red automobile leather top, which is a finer finished boat than the dory and just as seaworthy.

Motor Boat Fittings and Accessories.

The largest line of boat fittings, accessories and marine hardware at the show is that of the A. S. Morss Co., of Boston, in spaces 52 and 62, and their exhibit is one of the attractions of the show. Everything in the line of marine fittings and hardware will be shown, including such articles as Running and Riding Lights, Steering Wheels, Ground Tackle, Ventilators, Toilet Room Appliances, Cushions, Life Preservers, etc. In fact they will carry a line that would completely outfit a boat of any size.

After occupying quarters at 210 Commercial Street, since the days of the clipper ship era, where they outfitted the famous sailing ships of Boston, Salem, Newburyport, etc., the A. S. Morss Co. found that they had outgrown the facilities of the old store and have just moved into new quarters at 43-45 High St. Here they have a salesroom 110x25 feet, where the goods they carry can be displayed to advantage by the salesmen.

The A. S. Morss Co. issue a complete catalog of marine fittings and boat accessories which every boat owner should have.



20-Foot Bath "knock-down" V-bottom boat, doing 25 miles per hour.

Bath Marine V-Bottom "Knockdown" Frames.

The Bath Marine Construction Co., of Bath, Maine, are this year making a specialty of knock-down frames for V-bottom boats. The V-bottom type has become very popular recently, and the Bath Company use the Hand model which Mr. W. H. Hand of New Bedford, Mass., recently produced. In action these boats are quite equal to any type of motor boat. They are stiff and steady, excellent little sea boats and they can be driven at a surprising speed on very moderate power. They are easy to put together and in building them in knock-down frames and with planking cut to shape the Bath Marine Cons. Co., furnish a boat that can be very easily put together by the amateur builder. They make the boats in the following sizes:

By Jove It's Locked

That's the Hurlburt Locked Deck Plate

NO possibility of tampering with the gasolene tank. It's fool proof, because the lock cannot be picked; cannot be opened without the key that fits and there are only two that fit and you have them. Screws and keyhole covered, preventing dirt and sand from clogging mechanism. Plate is dependable and nicely finished.

Ask your dealer for the *Hurlburt Locked Deck Plate*—see that you get it—don't take "No" for an answer: save worry and expense. Ask your dealer for *Anchors, Wheels, Deck Plates, Compasses, Rowlocks, Boat Nails, Hooks, Cable Chains, Lights, Lanterns, Pumps*—in fact anything in the marine hardware line—up-to-date, dependable. If he doesn't carry our goods, write to us for nearest dealer who does. Booklet shows why marine hardware and specialties are the standard of the world—backed by 65 years' experience.

Wilcox, Crittenden & Co., INC., Middletown, Conn.
EST. 1847

LARGEST MAKERS OF MARINE HARDWARE IN THE WORLD

Biddle MONEL METAL Propellers

Non-Corrodible Stronger Than Bronze
Shine Like Silver

The power boat *not* equipped with a Monel Metal Propeller loses in speed, efficiency and economy of power.

Think of a propeller that is three times as strong as bronze and glistens like silver under all conditions! Think of a propeller that never rusts or tarnishes and reduces friction to practically nil!

The United States Navy now uses the Monel Metal Propeller on battleships and topedo-boat destroyers, and other navies are fast adopting it.

Biddle Monel Metal Propellers are designed with scientific accuracy by experienced Naval architects. The blades are *absolutely true to pitch* and get the utmost out of every engine stroke.

Write for complete information on propellers and Monel Metal hardware—chocks, cleats, rail stanchions, etc.

Visit our exhibit at the Motor Boat Show in New York, February 17 to 24.

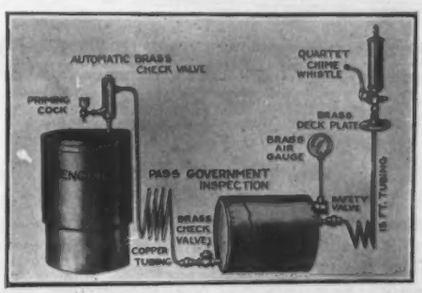
BIDDLE HARDWARE CO.
(Established 1837)
507 Commerce St., Philadelphia
Branch Offices: London, Stockholm, Montreal, New York

The "YANKEE" SILENT MUFFLER And Whistle Outfits

For AUTOMOBILES, LAUNCHES AND MOTOR BOATS

The only Muffler made without back pressure or noise at all speeds of the engine. Adapted for 2 and 4 cycle engines. Marine Mufflers are water-tight. No complicated parts. The gases do not reverse, which prevents back pressure. Made of galvanized steel, and light in weight. Over 300,000 in use on automobile and marine engines. Made in various sizes, for 1 to 75 horse power engines.

"YANKEE" WHISTLE OUTFIT



The Automatic Check Valve is quickly attached to any make or style gasoline engine in place of priming cock either on top or side of cylinder. Furnished complete, as shown. Passes Government inspection, filling every requirement of the law. With this outfit the operator always has a good pressure of air to blow the whistle, which is a 4-toned quartette Chime whistle, producing a deep musical sound, which can be heard for miles on the water. No complicated parts to get out of order. All parts in sight after the outfit is installed are brass highly polished.

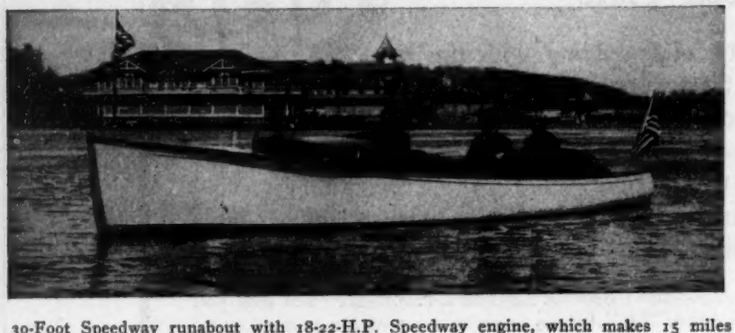
For sale in New York, by Durkee & Co., Chas. H. Miller, E. J. Willis Co., John C. Hopkins, Chicago, Geo. B. Carpenter, 200 S. Water St., Canada, Canadian Fairbanks Co., Montreal, Toronto, and Vancouver. Write for descriptive catalogue on full line.

Manufactured only by

THE "YANKEE" COMPANY
Incorporated
UTICA, NEW YORK, U. S. A.

Consult YACHTING'S Information Department on any of your problems. Its service is absolutely free.

16-foot launch, 18-foot runabout, 22-foot speed boat, 22-foot auto-express, 25-foot racer and 25 and 28-foot cruisers. The company will furnish the regular knock-down frame alone, or all the material for building down to the paint and varnish with which the boat is finished. In addition they make frames for a 10-foot yacht tender. The prices range from $27 for the frame alone of the 16-foot launch up to $725 for the complete outfit. The company will also build boats all finished, equipped on the same model, with power ready to use.

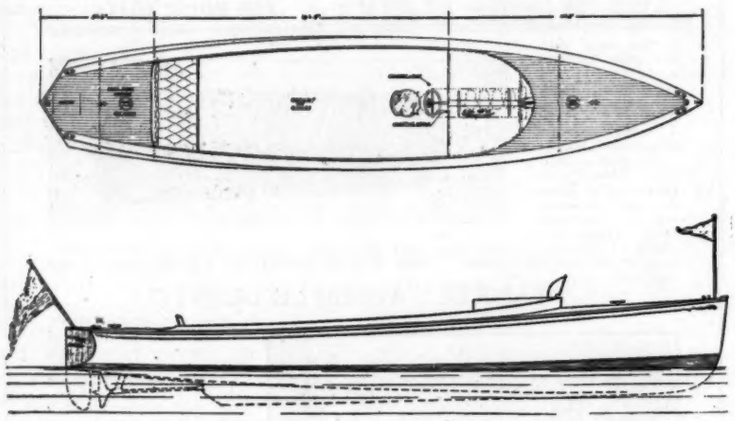


30-Foot Speedway runabout with 18-22-H.P. Speedway engine, which makes 15 miles per hour.

Speedway Boats and Engines.

The Gas Engine & Power Co., and C. L. Seabury & Co., Consolidated, have an exhibit in space Nos. 35 and 36 consisting of one of their 30-foot Speedway runabouts and some of their well known Speedway gasolene engines. The boats manufactured by this concern have such a high reputation for design, construction and finish that the 30-footer they will exhibit will undoubtedly be one of the finest pieces of work at the show. It is a regulation stock type boat with cedar planking and mahogany finish and is equipped with a 4-cycle, 4-cylinder 4½x5 inch Speedway engine of 18-22-H.P. with which a speed of 15 miles an hour is attained. This is one of the most popular sizes of craft which this firm turns out and it cannot be excelled for workmanship and finish.

This firm will also show a half model of the 138-foot yacht tender Thelma built by them last year for Mr. Morton F. Plant's new schooner Elena.



Profile and accommodation plan of 30-foot Speedway runabout.

The line of engines which is shown are the 4-cylinder, 4-cycle, 4x4½-inch, 12-15-H.P. Speedway, and a 6-cylinder, 6x6-inch, 50-60-H.P. Speedway. This is not by any means a complete line of the Speedway engines, but these, with the one in the launch, will tend to show the variety of range which this firm makes.

In addition to the foregoing, an article that will attract much attention from the practical yachtsmen will be a Speedway alcohol yacht range which this firm has recently perfected for use on board motor boats and yachts. The ideal stove for yacht use has been a long time coming, and the operation of this range will be watched with great interest.

Racing Hydroplane June Bug.

The feature of the exhibition of the American Marine Equipment Co., of Boston, Mass., in spaces Nos. 1 and 2, is the 14-ft. racing Hydroplane June Bug. This boat was designed by S. S. & R. P. Breeze of New York and is owned by Oliver Iselin of N. Y., manager of last year's Harvard crew. This is the boat that gave the wonderful 31 miles-an-hour exhibition at the time of the Harvard-Yale race on the Thames last year. This little racer will hold the attention of the speed "Bugs."

Motor Dories and Skiffs.

A. R. True of Amesbury, Mass., builder of launches, whaleboats, cabin cruisers and skiffs from 14 to 40 feet in length, exhibits in spaces 217 and 218, two of his stock boats. These consist of a smooth planked motor dory equipped with a 3-H.P. engine, and a Merrimac River Rowing skiff. These dories are made in four sizes, 18, 20, 22½ and 26 feet, equipped with either Hartford or Vim motors from 3 to 10-H.P. These are smooth planked boats, though the firm turns out a 16-foot lap streaked power dory, a hunting cabin cruiser and whaleboat launch, the two latter being built in sizes from 25 to 30 feet in length, equipped with either Hartford or Vim 2-cyl. motors. They are finished in two grades, A and B, the price ranging from $150. for the 16-footer with 3 H.P., and $335 for the 20-footer with 5 H.P., to $850 for the cabin boats. The boats are galvanized fastened, though will be copper fastened at a slight additional cost. The boats are strongly built, seaworthy and of excellent model.

Insure Your Boat.

If any one has ever been in a tight place with his boat and wondered whether or not he would get out of it whole, that man will appreciate the advantages of yacht insurance and will know the peace of mind which comes with it. It is only within the last few years that the average owner of a small or medium sized yacht realized that he could be relieved of the chances of loss by wreck, fire or collision, and it is largely due to the efforts of the Insurance Co., of North America.

By insuring with the Ins. Co., of North America the owner of a motor boat guarantees himself against the loss of his boat. This does not mean only when he is aboard of her, but at all times when she is afloat between the first of May and the first of November, or when she may be lying at her moorings, or for the balance of the year when she is laid up on shore or some storage basin. The rates are surprisingly low and before going into commission this spring every boat owner would do well to look into this subject. Rates on the various classes of boats can be had by writing the Insurance Company of North America.

Star Air & Bilge Pumps.

In these days of strict government inspection, one of the most difficult problems which confronts the motor boat owner is a proper whistle outfit that will make enough noise to be heard, and is reliable and absolutely safe.

There are many kinds of air whistles manufactured which get their compressed air in various ways, but for absolute safety the STAR AIR PUMP made by W. and J. Tiebout, 118 Chambers St., N. Y., seems to stand by itself.

In the first place it is a small affair requiring but 3½ inches of space for the No. 2 size, and 4½ inches for the No. 4 size, on the propeller shaft. The pump itself is only 8½ inches long from centre of shaft in the small size, and 11 inches long in the No. 4 size. It is operated by a split cam which is slipped on the shaft in any desired position, and has an automatic check so that it will not increase the pressure on the tank after 60 lbs. is reached. As the tanks are tested to 100 lbs. pressure, all danger of bursting is avoided, and as the air which is pumped into the tank is pure air and not gases from the engine there is no danger from explosion by fire. The whistle can be blown in 30 seconds after starting the engine, and at 450 r. p. m. the pump will have a 60-lb. pressure on a 10-gallon tank in 10 minutes.

The Star Air Pump also comes with friction drive, having a 6-inch wheel attached to it which operates on flywheel, there being a speed-reducing device so as to get the best result. Tiebout & Company also make a complete line of chime and single tone whistles and furnish three different styles of complete whistle outfits, including tank, pressure gauge, and whistle and and tubing necessary for the connections. In addition to the air pump they also make the Star Bilge Pump.

Cape Cod Power Dories.

The Cape Cod Power Dory Co., of Wareham, Mass., occupying spaces 12, 13 and 14, have a number of their power dories and flat bottom skiffs. Among them is a 20-foot Special smooth-planked dory, fitted with a 3½-horsepower Palmer motor. They build this model in other sizes, the 22-footer being smooth planked and fitted with a 5½-H.P. jump-spark motor,

SHIPMATE RANGES

8 SIZES 11 STYLES

First in reliability,
First in convenience,
First in the hearts of those who follow the sea.

THE STAMFORD FOUNDRY COMPANY

Established 1830. STAMFORD, CONN.

(PURITAN) **OWNER'S SPECIAL** (SET)

with Spring Cock, Closet and Lavatory Complete
$40.00 Net Cash

with (Fig. 250) Pump, Closet and Lavatory Complete
$45.00 Net Cash

INSTALL IT YOURSELF
With My Patented Outboard Connections (it's so easy)

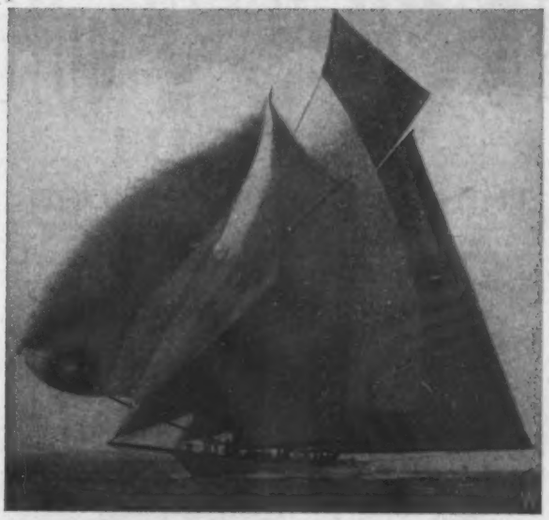
NONE BETTER

NONE BETTER

Closet only with all Fittings. $31.00 Net Cash

GUS. A. DIEM, 20 Fulton St., N. Y. City

Look for it at the New York Show



WESTWARD ALEXANDER COCHRANE, Owner

"The big schooners Westward and Elena, however, furnished the real sport of the day, for a longer and more hotly-contested race has seldom been sailed by two such large yachts."
—*Boston Herald*, August 9th.

The Westward and Elena both carry Lowell Duck

Every Cup defender and practically all the winning yachts of the country since 1898 have used

TRADE MARK REG. U.S. PAT. OFF.

LOWELL DUCK.

It is strong, wears and keeps its set and shape

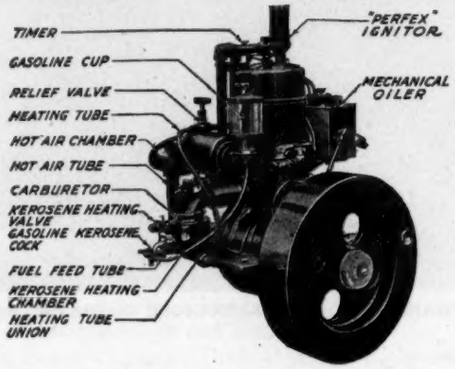
Used by the Cup defenders, the 70's and 65-footers, the racing schooners, the 30's, 25's, Q class, 15-footers, the Sonder-class boats, and by the great majority of racing and winning yachts. Be sure to get Lowell Duck. It is made in two qualities:

REGULAR for CRUISING
SPECIAL for RACING

BOSTON YARN COMPANY
Selling Agents, Boston, Mass.

The KNOX MOTOR IS RIGHT

THINK OF THIS RECORD

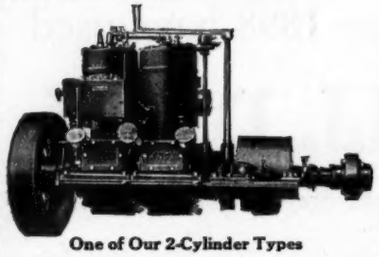


"This little 3 h. p. Knox drove the 25-foot Sea Bird across the Atlantic, covering over four thousand miles through head seas and roughest of weather without a hitch. Runs of twenty hours frequently were made without touching the motor at all. This motor is in hard use to-day and is as good as it ever was."

All Knox Motors Burn Either Gasoline, Kerosene or Alcohol

THINK OF THIS, TOO

WITH CAPITAL AND EXPERTS AVAILABLE TO "IMPROVE" OUR MODELS FOR 1912 OVER THOSE OF 1911, WE ACTUALLY CAN FIND NO WAY TO BETTER THEM. Our 1911 Knox astonished the world in its trip across the ocean in the Sea Bird. No other motor has ever met this test for Durability, Reliability and Power.



One of Our 2-Cylinder Types

They are built with the greatest of care, and the very best of materials.

No flaws or weaknesses are hidden under bright finishes or many coats of paint.

Knox Motors make friends for us, not enemies.

If you are going to buy a motor this year be sure to investigate the Knox. All sizes from 2½ to 40 h. p.

Full details and proof on request.

Camden Anchor-Rockland Machine Co.

CAMDEN - MAINE

AGENCIES

292 Franklin St., Boston, Mass.
436 W. Conway St., Baltimore, Md.
Prince William St., St. John, N. B.
Cooper & Company, Jacksonville, Fla.
36 Colman Dock, Seattle, Wash.

with reverse gear. Both of these boats are planked with cedar ove hardwood frame, are galvanized fastened, and have a small cabin b over the motor, which is installed in the extreme after-end of the b thus thoroughly protecting the engine from the weather, and at the sa time keeping the boat entirely free from any grease or oil which the eng may throw off.

Rice Bros. Co. 20-foot runabout with 4-H.P. Rice engine. Speed 8 miles per h

Rice 20-Foot Launches and Runabouts.

All those interested in a high-class motor boat at a moderate pr will examine carefully the two boats of the Rice Bros. Co., of E Boothbay, Maine, in space No. 20. This company makes a specialty stock boats in only one size, viz. 20 feet x 4 feet 4 inches x 17 inch dra and it is only by building boats of one size that they are enabled to pr duce the craft they do for the price.

The material used in the special launch is as follows: stem, keel a frame, clear oak; planking white cedar, fastened to wood with bra wood screws of large wire; clamps and bilge stringers, spruce; top stre and stern, oak; deck, seat backs and battens, mahogany; seats and ceili cypress.

The power consists of a 4-horsepower single-cylinder jump-spark R motor which gives the boat a speed of a little better than 8 miles an ho The propeller is 13½ inches diameter x 15 inches pitch on Tobin bron shaft. The whole outfit is very complete and is finished in a workmanli way. Price $275.00.

The other boat which this Company makes is a 20-foot fast runabo of practically the same dimensions as the other, but equipped with an 8-h H.P. Rice 2-cycle jumpspark motor with reverse gear turning a 14½x inch three-bladed wheel. Price $375. The new Rice catalogue conta the full lines of the boat with description, specifications, etc.

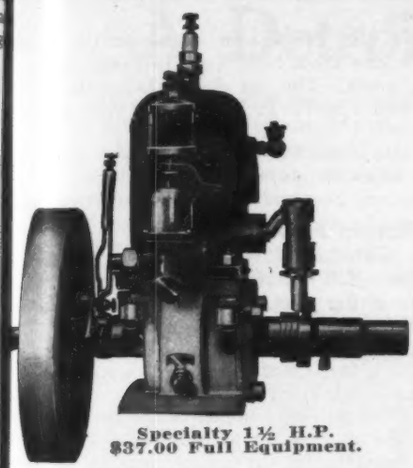
28-Foot Elco runabout equipped with 40-H.P. 4-cycle Elco motor. Speed 20 mi

Elco Boats and Engines.

The Electric Launch Co., of 193 Avenue A, Bayonne, N. J., ha added to their well known and popular stock of cruisers, Express R about and Elco planes, two new "planes" this year of the smaller s The present stock sizes made by this firm are the 16-foot 30-mile a 20-foot 35-mile Elco Planes, the former built on the model of the fam boat The Bug, which tore things up in Eastern waters last year w the speed of 30 miles an hour; a 28-foot runabout with a speed of miles an hour; a 35-foot Elco express with a speed of 24 miles an ho and a 40-foot cruiser with a speed of ten miles, all these speeds be guaranteed by the Electric Launch Co., a guarantee behind which reputation of the company rests. The Elco standard of construct

CRAGG HIGH SPEED MOTORS

SIMPLE, HANDSOME, POWERFUL, DURABLE, RELIABLE
THE BEST MARINE MOTORS POSSIBLE TO PRODUCE



Specialty 1½ H.P.
$37.00 Full Equipment.

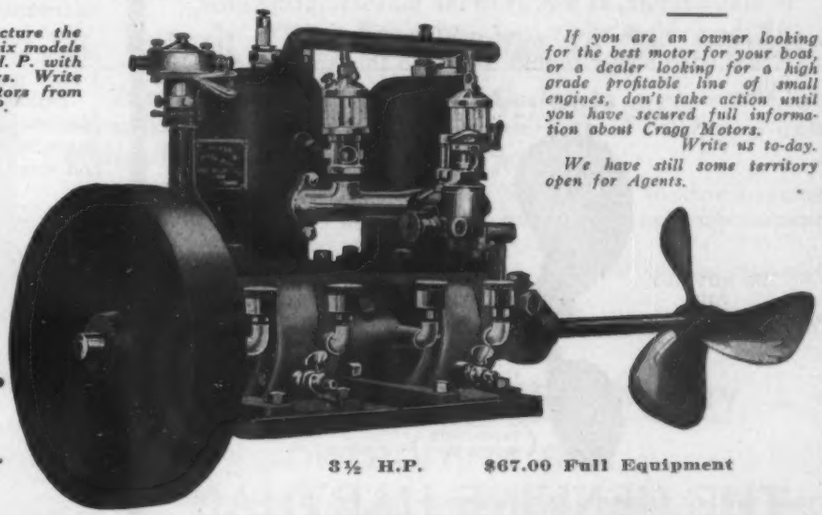
When you buy a Cragg Motor you don't buy an experiment. You buy a motor that has not only been tested by the manufacturer but has been proven the height of motor perfection in the real test of every day service.

Cragg Two-Cycle Three-Port Motors are built primarily for service and satisfaction, and that is what they give. They are built a little better and backed with a little stronger guarantee than some manufacturers might think necessary—but that is the secret of Cragg success. Good service means satisfaction for the owner, profit for the dealer and success for the manufacturer. There is a selfish purpose back of the quality we put into Cragg Motors, the high grade design, workmanship, finish and equipment. We know that our success as manufacturers depends upon the success of our motors. That's why we offer the perfection of motor production in Cragg Motors and would build them even better if it were possible to do so.

We also manufacture the heavier motors in six models from 4 1-2 to 36 H. P. with 1, 2 and 3 cylinders. Write for catalog. Motors from 1 1-2 to 30 H. P.

Cragg Motors have all the high grade features and latest improvements of the higher priced motors. They are built with either iron or aluminum bases and have brass trimmings, interchangeable bronze bearings and the complete equipment supplied with every motor is of the highest class in every detail.

One exclusive feature of Cragg Motors is that they reverse, run on high, low or medium speed, stop and start—all by means of only one control lever. This makes them so simple that any child can handle them. They have only three moving parts and are the simplest in construction of any motors on the market.



3½ H.P. $67.00 Full Equipment

If you are an owner looking for the best motor for your boat, or a dealer looking for a high grade profitable line of small engines, don't take action until you have secured full information about Cragg Motors.
Write us to-day.

We have still some territory open for Agents.

Gilmore-Cragg Motor Mfg. Co.

607 Wayne County Bank Building
DETROIT, - - MICHIGAN, U.S.A.

"Write us for our Saving Payment Plan."

30 Days Free Trial

A New Principle in Carburetors

IF the **Krice Carburetor** does not give 20% *more power,* use *less gasoline,* give *better control,* send it back and get your money back. *You take no chances.* We *guarantee every Carburetor* sold to give absolute satisfaction.

The only sure way to know that you are getting *all* the power from your engine, is to try a Krice Carburetor.

KRICE CARBURETOR COMPANY

6 Charlotte Ave., Detroit, Mich.

FREE! FREE! FREE!

You can have a generous sample bottle of 3-in-One Oil any time you write for it.

The sample will *convince* you that 3-in-One is the one and only preparation that keeps everything about any boat, launch or sail boat, shining like new, free from rust, verdigris and tarnish, and running like clockwork.

3-in-One is positively the best preparation for cleaning and polishing every veneered and varnished surface aboard. It "chases" all scars and mars. Restores the original finish "good as new."

If it is applied to metal surfaces, neither fresh or salt water can possibly produce rust or tarnish.

Simply perfect for oiling fans, motors, delicate electrical machinery, phonographs, guns, revolvers and every kind of tool needed to keep the Yacht shipshape.

Don't lift anchor and leave 3-in-One at home. Buy at any store; 8 oz. 50c.; 3 oz. 25c.; Trial Size 10c.

REGISTERED 3-IN-ONE TRADE MARK

3-IN-ONE OIL CO.

27 BROADWAY
NEW YORK CITY

Consult YACHTING'S Information Department on any of your problems. Its service is absolutely free.

LEARN THE TRUTH
ABOUT
PROPELLERS

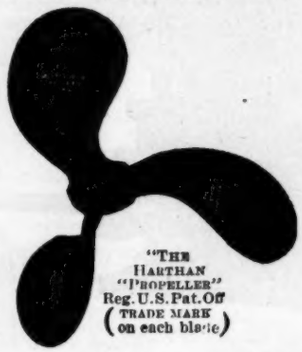
There is a big difference in propellers—in balance, accuracy of pitch and the reliability of the materials used in manufacture, as well as in the manufacturing *itself.*

All these things affect *serviceability* and *speed.*

Every boat owner should look into this subject carefully.

HE SHOULD KNOW THAT

DO NOT BUY AN IMITATION



INSIST THAT IT'S A HARTHAN

THE GENUINE HARTHAN PROPELLER

is the Most Imitated Propeller on the Market

That it is made with the care of a watch.

That its pitch, balance and construction on all models is perfect.

That it is made in two or three blade styles, right or left hand.

Its use Substantially Increases the Value of any Boat

THE GENUINE HARTHAN *is a* SPEED KING

Look at the record of Little Sand Burr, the sensation of 1911. She consistently beat much bigger boats.

Look at Gretchen II, speed 40.25 m.p.h.; Kitty Hawk, speed 37.1 m.p.h.; Reliance IV, speed 36.25 m.p.h.

All these use **GENUINE HARTHAN PROPELLERS**

FOR CRUSING AND TOWING WE HAVE MODELS EQUALLY AS GOOD

A BIG STOCK OF ALL KINDS ALWAYS ON HAND
NO DELAY IN SHIPPING

Special wheels made to your own design and pattern, if desired

SPECIAL ATTENTION GIVEN TO PROPELLERS FOR HYDROPLANES

Write us or our representatives for details before you buy for 1912

In YOUR interests let us PROVE what we say

McFarland Foundry and Machine Co.

TRENTON, NEW JERSEY

BOSTON — The Lincoln-Dillaway Co., 178 Commercial St.
NEW YORK — Topping Brothers, 122 Chambers St.
PHILADELPHIA — F. Vanderherchen's Sons, 7 North Water St.
NORFOLK, VA. — The Wallace Brothers
PORTLAND, OREGON — The Rober Machinery Co.

which has long been the *standard* of excellence in the motor boat wor is carried out in all these craft.

Their thorough reliability is also well known, a boat built by this fi having won the long distance race from New York to Poughkeepsie a return for four consecutive years. The cut shown herewith is of t 28-foot Runabout equipped with a 40-H. P. Elco motor, with a speed 20 miles an hour.

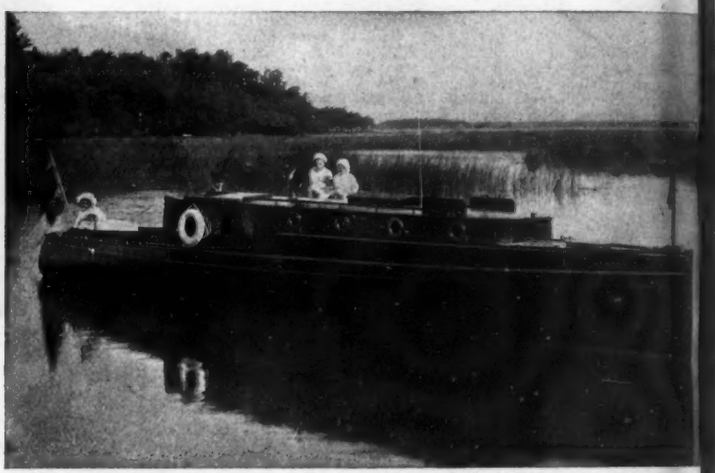
The Electric Launch Co., also make the Elco 4-cycle high-speed mot for hydroplanes and speed boats in 40-H.P. 4-cyl. and 60-H.P. 6-c equipped with their special reverse gear and with a number of refinemen

Michigan Propellers.

The 1912 catalog of the Michigan Wheel Co., of 569 Canal Stre Grand Rapids, Mich., contains a full description of the various types propellers, the manufacturers giving sizes, pitch, prices and much oth information that will be useful to the motor boat owner.

Sizes.—Michigan Wheels are made in 2 and 3-blades, from 10 to inches in diameter and in all types, speeds, standard, weedless, etc., a price range from $2.61 for 10 inch bronze wheel up.

Besides propellers, the Michigan Wheel Co., make the well-know Michigan Reverse Gear, of the planetary type, shaft couplings, stuffi boxes, etc. Catalog will be sent free for the asking by addressing abo and mentioning YACHTING.



Sirkka, a 37-ft. cruiser, owned in Finland, which won the Hilsingfors-Han long-distance race with her 40-H.P. Buffalo engine.

Buffalo Engines Take Principal Races in Finland.

The quality of American-designed hulls and American made engines ha been so emphatically demonstrated in Finland waters during the last seaso that manufactures are expecting to see a marked increase in their Finnis business next year.

Notable among the American victories are those of the races hel between Helsingfors and Hango on July 18th. There were two of firs importance, one for cruisers and one for speed boats. Both the winner were powered with Buffalo engines and one of the hulls was of America design.

In the speed boat class 14 boats were entered, but when it came tim for the start such a high wind was blowing that all but 4 withdrew. O these four which started from Helsingfors only one reached Hango. Th winner was Turso, which in English means Sea Devil.

Turso is built on exactly the same design as J. W. Whitlock's Hoosie Boy, which won fame in the Central West two years ago. Like Hoosie Boy her power plant is a 90-H.P. Buffalo High Speed engine. She cov ered the distance between the two points in 3 hours and 40 minutes, mak ing an average speed of over 20 knots, which is considered a remarkabl performance considering the sea that was rolling, but although the sea often washed over her. Turso's engine ran perfectly all the time, despit the fact that it was practically untried, the boat having been launched onl two days before the race. Turso is owned by E. A. Bergins, a civil engi neer of Tammerfors, Finland.

The race for cruisers held the same day went to Sirkka, owned b President Walter Aptstrom, of Bjorneborg. She is 37½ feet overall feet 10 inches beam, and powered with a 40-H.P. Buffalo engine. Her bes speed was 14.2 knots for the course.

Be Careful of your Decks.

It is a good idea for the boat owner, when specifying work to b done on his boat before going into commission next season, to specify that Jeffrey's Marine Yacht Glue be used to pay the deck seams, or if he intends to do it himself to write to L. W. Ferdinand & Co., of 201 South

A Detroit Oiler Remembers for You

Ordinary lubricators have to be turned on when the engine starts and turned off when it stops. *If you forget*, it means wasted oil or a damaged engine.

You don't have to remember to turn a Detroit Force Feed Oil Pump on or off.

It starts and stops with the engine.

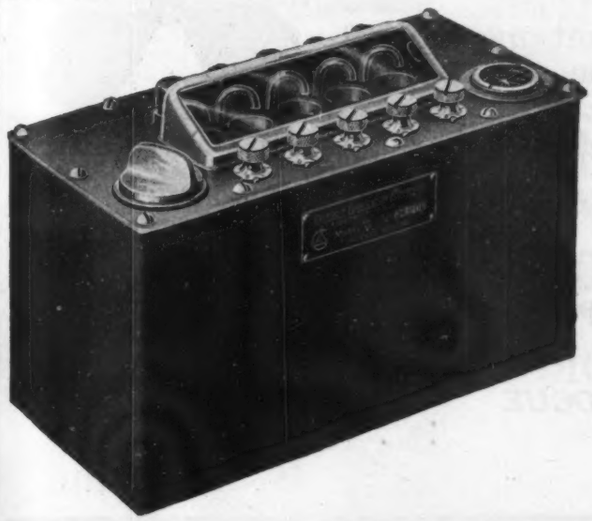
When the engine goes faster, the Detroit delivers more oil—when you go at half speed, the pump feeds only half as much oil.

Always the right amount of oil *and no more*—without any attention from you at all.

The Detroit Force Feed Oil Pump *insures* you against wasted oil and a damaged engine.

It gives you positive, mechanical, *sure* lubrication that lengthens the life of your motor and leaves you free to enjoy your boat.

There is no bother connected with Detroit lubrication.



A Detroit Oiler never has to be regulated

It's automatic. Once it is adjusted to your engine, you never have to regulate it. The quantity of oil fed is automatically regulated by the engine speed.

Detroit Force Feed Oil Pumps are furnished as standard equipment by manufacturers of high grade gasoline engines because their customers don't want to be bothered by ordinary lubricators.

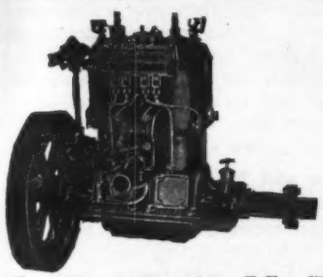
The Detroit Oil Pump is the simplest, most efficient and economical means of lubrication on the market.

Specify a Detroit on your next engine and write to-day for Catalog P-69.

DETROIT LUBRICATOR COMPANY.

DETROIT, U. S. A.

Largest Manufacturers of lubricating devices in the world



MADE BY GUNMAKERS

GOES LIKE A BULLET

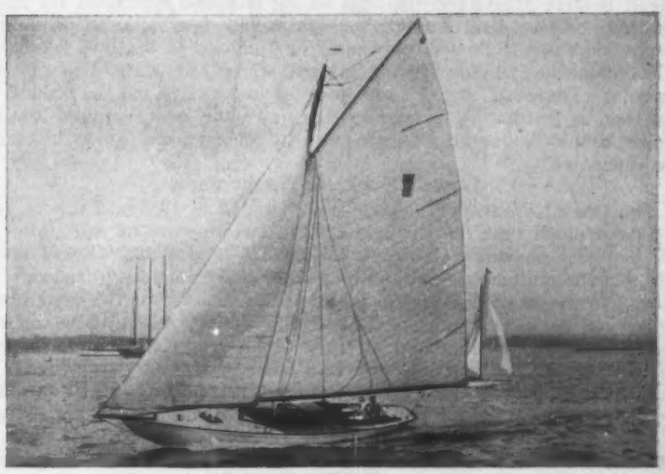
16-20 H. P. $200.00

For 30 Days Only

WE are catering to, and are getting, the highest grade, highest powered, most critical engine trade in America. To do this we employ a corps of skilled mechanics, who demand, and can get, a wage that would make their employment impracticable in an engine factory devoted to "commercial" engine building and nothing else. Most of these men are gunmakers who have spent years in the government gun shops. It has taken years to get this skilled force together and to keep them intact for the rush season, we make the two cylinder engines during the duller period. This enables the customer to get an engine made by this skilled force instead of investing in a motor that is made by the cheaper labor that strictly "commercial" engine building demands. The price is no greater than the commercial article. Write for catalogue "B". If interested in speed write for catalogue "S".

THE EMERSON ENGINE COMPANY, Inc.

ALEXANDRIA, VIRGINIA



ROWDY

Champion N. Y. 30-Footer, 1911, uses ROBINSON sails exclusively

Driving power and fit are the factors that have made ROBINSON sails winners. Durability and moderate price have made them popular.

ROBINSON spray hoods are indorsed by yacht owners and designers generally. We supply all types from simple dory hoods to elaborate canopies for the tenders of palatial steam yachts.

ROBINSON awnings, whether covering a mere cockpit or the deck of a "Vanadis", invariably give satisfaction.

Send Your Requirements

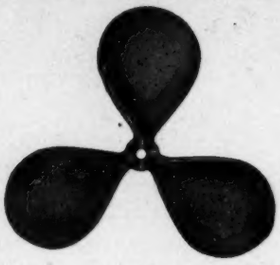
G. W. ROBINSON & CO.

Sail Makers

CITY ISLAND - - - - NEW YORK

Consult YACHTING'S Information Department on any of your problems. Its service is absolutely free.

HYDE TURBINE TYPE PROPELLERS



The name **HYDE** on a propeller is a guarantee of

EFFICIENCY

Many of the most important motor boat races have been won with

HYDE TURBINE TYPE PROPELLERS

They are properly designed for speed.
They run without vibration.
They are made of **Manganese Bronze.**
They are finished in the best possible manner.

THE PROPELLER OF QUALITY.

WRITE FOR CATALOGUE

HYDE WINDLASS CO. - - - Bath, Maine

Street, Boston, Mass., for a sample of the glue and directions for applying same. These directions are a mighty important item, as, while very simple and easily followed, they must be followed if the best results are to be obtained. The glue is made in black, white, yellow and also a mahogany color. The white, yellow and mahogany look pretty, but the black is the best, and is guaranteed by the makers to be the really genuine original sticker that relieves the owner's mind of all care, as far as his seams are concerned.

Lowell Duck for Yacht Sails.

The Lowell Weaving Company was founded in 1898 and for 14 years has spent much time and thought on the manufacture of sail cloth. Its aim has been to make the finest and best duck possible. Every known fibre has been experimented with, including Peeler, Egyptian and Sea Island cottons, linen, ramie and silk, and many different constructions of cloth have been tried out to demonstrate the proper relations between warp and filling, as to weight and breaking strength, closeness of weave and size of yarn, smoothness and cleanliness.

In Lowell Special Duck (trade-marked), this company believe they have reached as near perfection in sailcloth as it is possible to get. This is made in all widths from a 5 oz. cloth for single handers to No. 000 duck for mainsails of the largest yachts. The stock used is extra long staple Peeler cotton grown only in the Mississippi Delta, carefully combed to remove all short staple. The weaving is done by highest skilled weavers. The result of their work and a careful system of inspection gives practically perfect work.

To give a list of the yachts using Lowell special duck would be to include every cup defender since 1898, and practically all the winning yachts in the country since that date. The advantage in using Lowell duck lies in the fact that it wears and keeps its set and shape much better and longer than any other duck. It is also stronger and a yachtsman can have perfect confidence in it, as the Lowell reputation is behind it.

Impervo Waterproof Clothing.

E. A. Armstrong, of 215 West Kinzie St., Chicago, Ill., is making a line of clothing for marine, and, in fact, for all outdoor use, which will appeal particularly to the users of yachts and motor boats. If you have ever had your oil "slickers" stowed away in a locker for a week and found them all stuck up in a foul-smelling ball the next time you tried to put them on, you will appreciate Impervo cloth, which not only does not stick but has no unpleasant odor and is clean, light and absolutely waterproof.

Impervo is a rubberless product having all the good qualities of rubber and none of its faults, and it will not blister or peel in any climate. It comes in either olive-drab color or black. The cloth is made up into all kinds of coats from the short trouser and jacket of the seaman to the long officer's coat, or poncho for military use. Waterproof hats are also made in sou'wester shape or with round crown with brim all way around.

Wilcox-Crittenden Anchors and Marine Hardware.

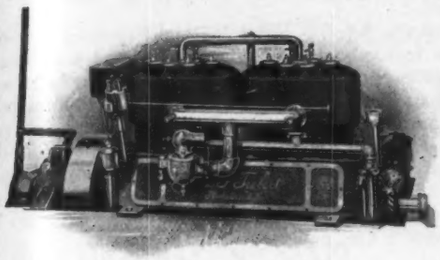
Nothing is more important to the safety and durability of a boat than the proper type of ground tackle and marine hardware, and for this reason boat owners should read the new booklet gotten out by the Wilcox & Crittenden Co., Inc., of Middletown, Conn., manufacturers of anchors, steering wheels and all kinds of marine hardware. Some of the new specialties for motor boats which this company is manufacturing are a Navy stockless anchor that will hold on any bottom. This is the type the warships and ocean liners have used for years, but only the Wilcox & Crittenden "Navy" have the "V" type lug in the end of the shank which insures quick action, the shank sliding to the best holding position at the slightest pull of the cable.

The Nutmeg launch wheel is a fine handsome galvanized wheel with hardwood handles and drum. It is a good looking wheel at a moderate price. The same company also make other styles of galvanized and brass steering wheels.

Harthan Propellers.

The McFarland Foundry & Machine Co., of Trenton, N. J., manufacturers of genuine Harthan propellers, keep on hand at all times a large stock of their wheels for motor boat use insuring the purchaser prompt delivery without irritating delays. The Harthan propeller has been on the market many years, and that it is designed on the correct principle is proven by the fact that a great many of last season's speed boats were equipped with this propeller, among them being Sandburr II, the little 20-foot champion that "cleaned up" all over the country last year; Gretchen II with a speed of 40.25 miles per hour; Kitty Hawk II with a speed of 37.1 miles and Reliance IV with a speed of 36.25. Great attention is given to the proper balance, design and pitch of this wheel and it has given universal satisfaction where used. Made in two and three blades, right and left hand. Owners of motor boats would do well to write to the McFarland Foundry & Machine Co., of Trenton, N. J., for prices.

40 H. P. 4 Cylinders
60 H. P. 6 Cylinders
80 H. P. 4 Cylinders



Poppet Valve Type

TREBERT
RELIANCE
GASOLINE PATENTED ENGINES

The Result of Fourteen Years' Experience

SOLD UNDER A POSITIVE GUARANTEE

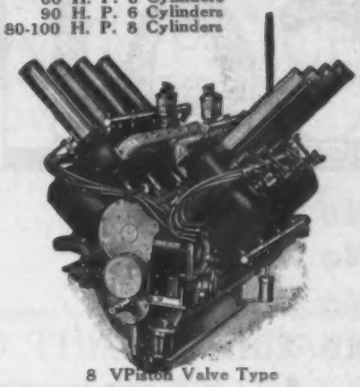
1—The lightest engine of the bore and stroke whose light weight is not secured by the sacrifice of strength. Our lightness is secured through skillful design and the elimination of needless parts.

2—THE ENGINE WITH THE MINIMUM MECHANICAL RESISTANCE. In the Piston Valve motors one valve does the work of intake and exhaust thus eliminating 50 per cent. of the valve driving waste energy.

3—THE ENGINE FREE FROM VALVE TROUBLE. THERE IS NO GRINDING VALVES. In the Piston Valve motors in case of loss of compression the valve can be lifted out and compression rings like those used in the pistons quickly and easily inserted.

H. L. F. TREBERT ENGINE WORKS
499 St. PAUL STREET OCHESTER, N. Y.

60 H. P. 6 Cylinders
90 H. P. 6 Cylinders
80-100 H. P. 8 Cylinders



8 V Piston Valve Type

20 FT. SPECIAL
$275.00

LAST year, when we first came out with our 20-foot Special Launch complete with 4-horsepower motor for $275.00, the general comments were, "How a mahogany finished, high-class boat could be gotten up for any such price." Our fifteen years' experience in the boat building business, and advanced methods of manufacturing, enable us to produce such a boat, and the boat buyers are not slow in taking them away.

We are now offering *still a bigger boat bargain* in our *20-foot Fast Runabout*, complete with 8-10-H.P. double cylinder, jump spark engine for $375.00. Speed twelve miles. Write for booklet.

RICE BROTHERS COMPANY
EAST BOOTHBAY, (DEPT. J.) MAINE, U. S. A.

Steering Gears
and Marine Fittings

FOR POWER AND SAIL YACHTS

Edson Manufacturing Co.
Established Eighteen Hundred and Fifty-nine
260 ATLANTIC AVENUE, BOSTON, MASS.

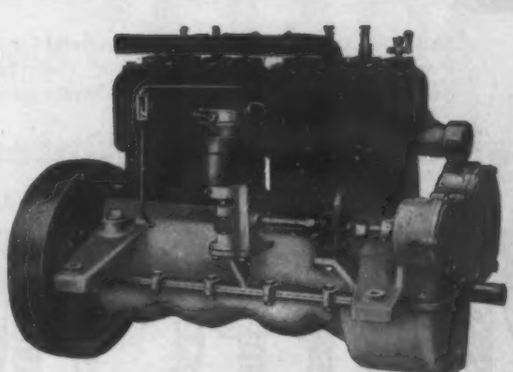
$150 KERMATH $150

Made by Kermath Mfg. Co., Detroit, Mich.

4 Cylinder, 4 Cycle, 3½" x 4", 10-12 H. P.

"The engine you have hoped for."

SOLE DISTRIBUTORS:
MORTON MOTOR COMPANY,
47 East Fort St., - Detroit, Mich., U. S. A.



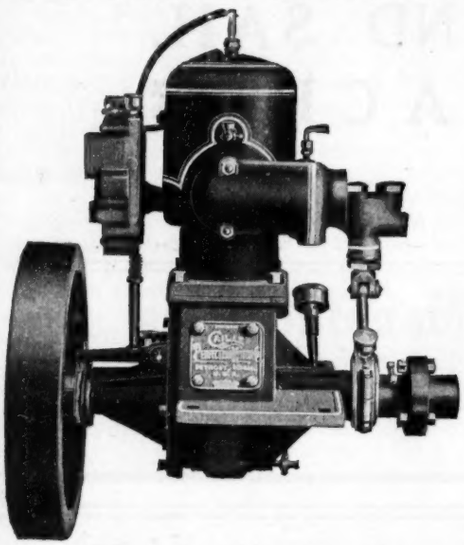
Consult YACHTING'S Information Department on any of your problems. Its service is absolutely free.

CAILLE

No Batteries!
No Magneto!
No Coils!
No Timer!

AT LAST, here is a high grade marine engine with an ignition system guaranteed waterproof and consequently trouble-proof. The new 1912 Perfection marine motor with Perfection Ignitor is the greatest forward step yet made in the marine engine industry and marks a new and distinct epoch.

For fishing boats, oyster boats, ferry boats, work boats and all craft contending with all kinds and conditions of weather, the Perfection Heavy Duty 8 horsepower engine with Perfection Ignitor will simply thrive on genuine hard work—it starts on ignition—saves repair bills and there are no complicated parts to get out of order. This 8 horsepower engine, complete with Ignitor and ready to run, costs just $140—it works equally well in fresh or salt water, tidewater or stream, calm or storm—there is only one wire on entire system.



8 H. P.

$140

Don't let this opportunity go by—Send for our Perfection Marine Engine Book that fully describes the Perfection Ignitor—Write to-day

Caille Perfection Motor Co.

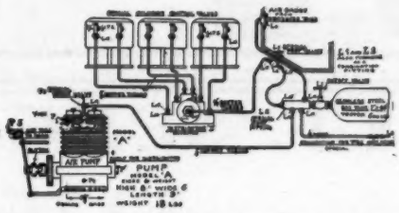
1221 CAILLE STREET DETROIT, MICHIGAN

PERFECTION

Janney-Steinmetz Seamless Tanks and Engine Starter.

Janney, Steinmetz & Co., of Philadelphia, Pa., and 30 Church Street N. Y., are putting on the market a new Marine Engine starter and whistle pump. This will be seen at the motor boat shows, attached to an engine in actual service.

This company also make a line of seamless steel, tinned and tested gasolene tanks for use on motor boats and automobiles, and air pressure tanks of all sizes for whistle outfits. These tanks are in use throughout the world where motor boats are used. They are made of seamless steel, thoroughly tinned inside and out, and are excellent for marine fuel use as they have no seams to leak and are strong and durable. Many of the best naval architects specify these seamless tanks, and boat owners consider them a good form of marine insurance on account of their safety. Prices, sizes and all information in regard to installation can be had by addressing Janney, Steinmetz & Co., and mentioning YACHTING.



Sectional view of Janney-Steinmetz compressed air motor starter.

Patterson Battery Holders.

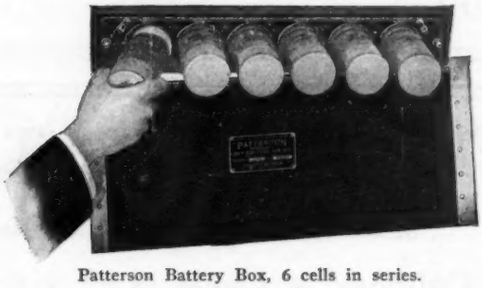
A large percentage of motor boat owners are now using the Patterson Battery Holders for ignition purposes. These holders are the result of a careful analysis of existing ignition troubles and a determined effort not only to partially obviate them, but to ENTIRELY ELIMINATE all troubles from dampness, loose connections, bad contacts, etc.

The fundamental principle of the Patterson Dry Battery System is a Screw Top Battery Cell which, without wires or binding posts, screws into one solid rubber composition plate, automatically making all connections. This moulded rubber plate forms a substantial, waterproof cover for the Battery Box, and as all contacts are moulded solid into this rubber plate, no possible loosening of connections, trouble from dampness, or anything of this sort is possible. The Battery Cells are SUSPENDED from the Plate and do not rest on any surface where dampness can collect.

A permanent and interesting exhibition of these sets can be seen at the main salesroom of the manufacturer, Stanley & Patterson, 23 Murray Street, New York, in charge of an Ignition expert, who will be glad to explain all details of this system.

Patterson Battery Sets are made in several sizes and styles ranging in price from $3.00 to $30.00, covering every possible ignition need, from the smallest 1½-H. P. single-cyl. engine up to the large 4 and 6-cyl. outfits.

For the benefit of out-of-town boat owners, Stanley & Patterson have compiled a Treatise on Gasolene Engine Ignition, with cuts, showing just what type of ignition outfit should be used with practically every make of gasolene engine. This treatise will be sent to every reader of "YACHTING" who may request it. Free, by addressing Stanley & Patterson, 23 Murray St., New York.



Patterson Battery Box, 6 cells in series.

Edson Steering Gears.

The Edson Manfg. Co., 260 Atlantic Ave., Boston, Mass., are manufacturers of steering gears for sailing yachts which have earned a name for themselves on some of the best known boats in this country. They make all kinds of gears from the quadrant toothed gear, operated by a rack and pinion, to the screw gear. The latter type is favorably known among yachtsmen by reason of its simplicity, its power and its delicacy it being almost as easy to *feel* a boat with one of this type as with the quadrant direct acting steering gear.

HIGH CLASS BOATS-MODERATE PRICES

STEAM, SAIL, GASOLENE OR "WHITE ASH" POWER

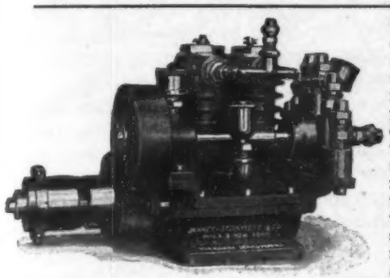
MILTON BOAT WORKS

RYE, N. Y.

ORDER NOW! WHERE MAY WE SEND THAT ESTIMATE?

The Janney-Steinmetz Motor Starter

Designed especially for the Six-cylinder Type—WILL "TURN OVER" ANY MOTOR



The outfit consists of a pump distributor; a seamless stee air tank; an air or throttle valve; cylinder valves, one for each cylinder; and an air pressure gauge. The pump-distributor unit consists of a two-cylinder pump, with a multiple port distributor mounted thereon. The distributor rotates continuously with the motor and atcam-shaft speed, while the pump is thrown into and out of action as required.

The action of the distributor is such that incoming mixture can't possibly be affected.

The rotor is so designed that the air is used expansively in each cylinder.

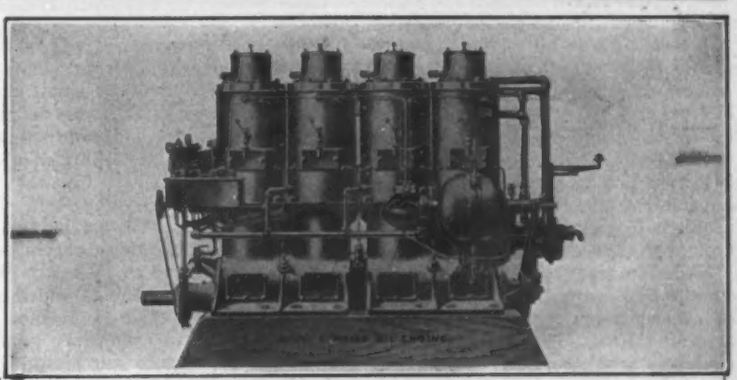
Each cylinder of the pump is a distinct pump itself, and an accident to either does not put the other out of commission.

The tank is tested to 500 lbs. cold water pressure. In operation the pressure carried is between 80 and 150 lbs. In starting the average size motor the gauge drops from 3 to 5 lbs.

Whistle can also be sounded with air from tank.

Our seamless steel tank represents absolutely the *best* in tank construction. Don't have a leaky tank when it's so easy to get a thoroughly reliable dependable one. Think this over NOW.

Main Office PHILADELPHIA — **Janney-Steinmetz & Co.** — Branch Office NEW YORK



MIETZ & WEISS OIL ENGINES

150,000 H. P. IN OPERATION

MARINE 2-600 H.P. STATIONARY 2-400 H.P.

Operate on Kerosene, Fuel Oil and Crude Oil

100 h.p. using three cent fuel saves $1800.00 per year over engine using gasolene at nine cents per gallon. Are you interested?

Send for Catalog

AUGUST MIETZ

134 MOTT STREET - NEW YORK

MEET US AT THE NEW YORK MOTOR BOAT SHOW

Gasoline Yachts & Engines

NOTED FOR RELIABILITY

Tregurtha Water Tube Boilers, Steam Launches and Engines
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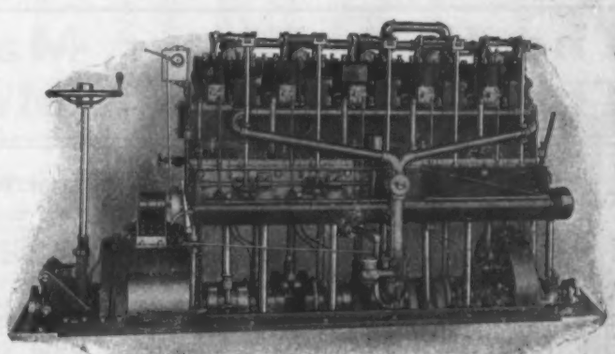
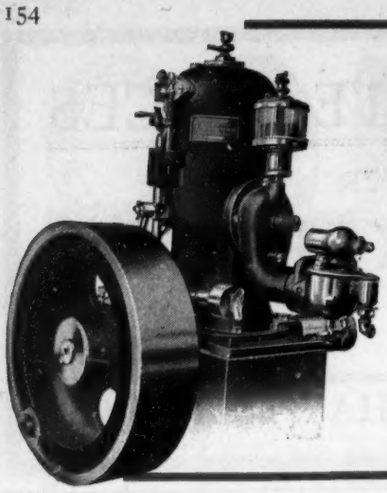


60 H. P. ENGINE

Consult YACHTING'S Information Department on any of your problems. Its service is absolutely free.



HARTFORD 2-Cycle Marine Engines

MADE IN SINGLE AND DOUBLE CYLINDERS
THOROUGHLY GUARANTEED IN EVERY WAY

5 Sizes FROM 3 TO 10 H. P.

ASK FOR CATALOG "M" AND PRICES

THE GRAY & PRIOR MACHINE COMPANY

656 Suffield Street - - - - - - - - HARTFORD, CONNECTICUT, U. S. A.

PORTLAND, MAINE BRANCH: 117 COMMERCIAL STREET

Hyde Turbine Propellers.

The Hyde Windlass Co., of Bath, Maine, are makers of a line of turbine propellers which will interest the boat owner looking to get the greatest efficiency and speed from his boat and engine.

The Hyde Turbine Type propeller is made in both two and three bladed wheels, both right and left handed, in sizes from 8 to 36 inches diameter, of pitch to meet the conditions imposed by any type or design of hull, or speed of motor.

Hyde Turbine Type propellers have been tried out the past season in competition with propellers of other makers with good results, and a number of the season's fastest racing boats were equipped with them, as well as contestants in ocean long distant races.

These propellers are made of Hyde manganese bronze, a non-corrosive metal of the highest tensile strength, such as has been used for 15 years in the propellers for the ships of the U. S. Navy and Merchant marine. They are made from metal patterns, correctly balanced, and are finished in the best manner. Having large blade areas they run with very little vibration. Price range $1.75 for 2 bladed 8-inch wheel to $50.

Wicker-Kraft Chairs for your Cockpit.

In practically all of the up-to-date power boats the old straight transom side or cross seat has given place to an open cockpit or deck furnished with wicker chairs in which the owner and his guests may take full comfort in their boat without having a vibrating cockpit coaming sawing into the small of the back. The Wicker-Kraft Co., of Newburg, N. Y., manufacturers of all kinds of wicker furniture, have long seen the trend in this direction and for some time past have been making wicker furniture for use not only on yachts but on row boats, canoes and for camp purposes. It is now possible to get from this firm wicker chairs designed especially for the cockpit or small craft which not only take up but little room but add materially to the appearance and comfort of the boat.

The latest thing in wicker furniture which the Wicker-Kraft Co. have turned out is a motor boat life-saving belt chair, several models of which are being made.

All of these chairs are fitted with reinforced seats and every seat is fitted into box frame with brass fastenings which will not corrode or rust. Every chair is finished with two coats of boat Spar varnish which guarantees retention of their appearance and finish.

The materials that go into the Wicker-Kraft chairs are from the best American and German reeds, and are vastly superior to the China reeds, which only cost about one-third of the price.

The relation of wicker chairs to motor boats cannot be exaggerated. The Wicker-Kraft Co., get out a little hand book showing the various styles, shapes and prices of their furniture for yacht use which will be sent free upon request, mentioning this magazine.

Krice Carburetors.

The Krice Carburetor Co., of 6 Charlotte Ave., Detroit, Mich., are the manufacturers of the Krice Annular Spray Carburetor which has become very popular the last year wherever it has been used. In the application of the annular, or round spraying crevice, which, in fact, should hardly be called a spray device, the gasolene as it emerges from this crevice being only 8 to 10 thousandths of an inch wide, creeps up the side walls of the mixing chamber instead of being sprayed, and thus spreads the gasolene ready for fast vaporization.

Sizes. The Krice Carburetor comes in the following sizes: No. O, ¾-inch; No. 1, 1-inch; No. 2, 1¼-inch; No. 3, 1½-inch; No. 4, 2-inch. The price range is from $9 to $38.

Some of the advantages the Krice Carburetor Co. claim for their product are, more power, easy to start, quick control, can be throttled closer and uses less gasolene.

30 Days Free Trial. To demonstrate the above the Krice Carburetor Co. offer a 30 day free trial of the carburetor; then if you are not satisfied absolutely that it gives you a more powerful, smoother-running engine, you have the privilege of returning it and having your money refunded.

Monal Metal Propellers.

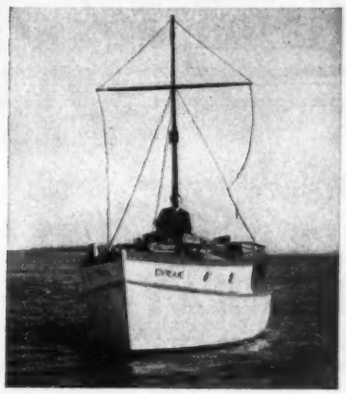
Seeing the wide field for non-corrosive propellers for motor boats, the Biddle Hardware Co., of 507 Commerce St., Philadelphia, Penn., distributers of the well known Monel Metal, now manufacture a line of stock propellers of this famous metal, which is noted for its durability. The services of the best known naval architects were enlisted in designing these propellers, and they are scientifically accurate in every particular. On account of the great strength of Monel Metal propellers the blades can be cut finer than with any other known metal. It can be ground and polished to a knife edge and cuts the water with a minimum of friction, thus getting the utmost out of every engine stroke.

Monel Metal is a wonderful new metal with the strength of steel and the lustre of silver. These propellers have been used on all the high grade motor boats where strength and lightness has been required. It has been used for rudder, struts, etc.

The High Water Mark In Value
The Low Water Mark In Price

A boat for the least money which rejects every characteristic of commonplace construction. :: :: :: :: ::

Make no mistake; we can give you the kind you are looking for—look us up. :: :: :: :: :: ::



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East 36th Street & New York Bay,
Take C. R. R. of N. J. to 33rd Street, Bayonne

FITTINGS FOR BOATS

The Morss Cowl Ventilator for Motor Boats is the very best. Handsome, adjustable, durable.

Made in galvanized iron and polished brass.

The MORSS Line includes everything for building or equipping a boat. Send 6 cents for illustrated catalog.

The SKENE Chock is a safety device which should be on every boat

A. S. MORSS CO. - 43 High St., - BOSTON, MASS.

The DOMAN MARINE MOTOR

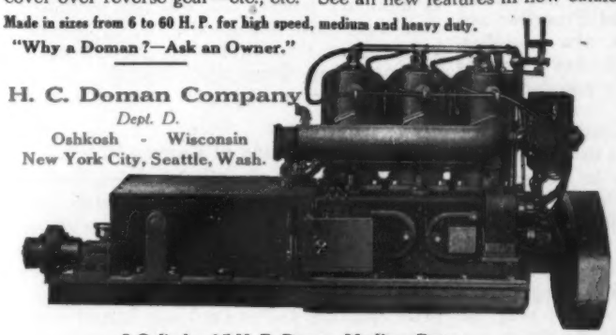
An Aristocrat Among Marine Motors

In a class all its own. When Doman Motors stand so high in the estimation of thousands of users—competition doesn't bother. Domans sell on their reputation—cheapness is no factor. It's the motor for you: because it is economical of fuel—flexible—long-lived—well-balanced—never overrated—horsepower guaranteed on low speed—cylinders "T"-head shape and each one is cast separately—aluminum cover over reverse gear—etc., etc. See all new features in new catalog.

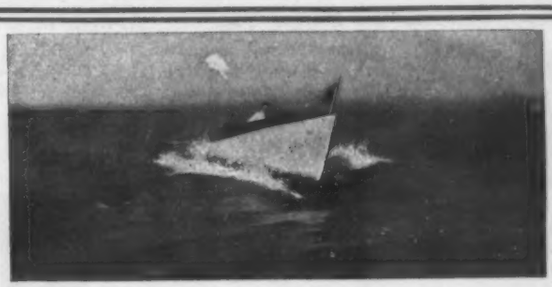
Made in sizes from 6 to 60 H. P. for high speed, medium and heavy duty.

"Why a Doman?—Ask an Owner."

H. C. Doman Company
Dept. D.
Oshkosh - Wisconsin
New York City, Seattle, Wash.



3 Cylinder 15 H. P. Doman Medium Duty



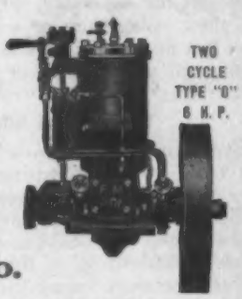
Fairbanks-Morse Marine Engines Give Reliable, Continuous Service

We can cite numerous instances where Fairbanks-Morse Marine Engines have replaced engines of higher rating and actually given more speed.

They appeal to both amateur and seasoned boatman by their simplicity, ease of control and freedom from trouble.

Two Cycle High Speed, 3½ to 24 H.P.
Two Cycle Slow Speed, 7½ and 15 H.P.

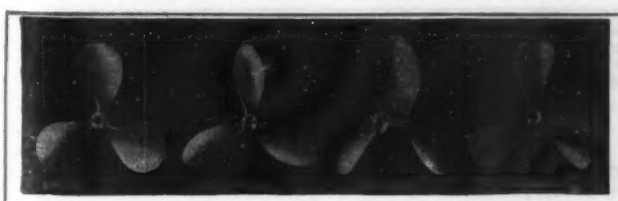
Four cycle high speed and heavy duty engines, sizes from 4½ to 40 H. P. to operate on gasoline, kerosene, alcohol or low grade oil fuel.



TWO CYCLE TYPE "O" 6 H. P.

Write for Catalog No. 1316PT

Fairbanks, Morse & Co.
Chicago, Ill., or any of our 30 Branch Houses



COLUMBIAN SPEED PROPELLERS

THE WHEELS THAT WIN

DO YOU KNOW THAT OUR

has more floor space devoted to motor boat propellers than any other in the country.

for 1911 included two of the four fastest boats in the country, which carried Columbian Architects Propellers. (The other two carried specially designed wheels.)

48 pages, shows more different styles and sizes of propellers than any other catalog ever published.

Bronze is guaranteed for strength.

line of motor boat accessories includes struts, rudders, rudder shoes, shafts, couplings, stuffing-boxes and other fittings.

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FACTORY RECORD CATALOG

MANGANESE EXCLUSIVE

Patented Universal-Strut Self-Aligning, Die-Cast Anti-Friction Bearings.

NEW YORK CITY LOCAL SALESROOM
133 LIBERTY STREET

WRITE FOR FREE CATALOG
PROPELLERS IN A NUTSHELL

COLUMBIAN BRASS FOUNDRY, 208 N. Main St., Freeport, L. I., N. Y.

Consult YACHTING'S Information Department on a ny of your problems. Its service is absolutely free.

FOR YACHTSMEN

A Strictly High-Grade Binocular is an Essential Accessory

We guarantee OUR STEREO-VISIOSCOPE, PRICE $33.75, to be one of the Finest and Most Satisfactory glasses for Yachtsmen ever produced, irrespective of cost. We solicit comparison for quality. The price, $33.75, tells its own story. We shall be pleased to send advertising literature on request. :: :: :: :: ::

PINKHAM & SMITH COMPANY

288-290 Boylston Street BOSTON, MASSACHUSETTS 13½ Bromfield Street

A Good Binocular for Marine Use.

Within the last few years probably no concern in this country has done more to place within the reach of the public, really high-grade optical instruments at reasonable prices, than Pinkham & Smith Company, of Boston, Mass. Their long experience with the retail trade convinced them that the sport-loving public were looking for a first-class Binocular Field Glass at a moderate price, which they proceeded to supply in the Visioscope, at the price of $28.75.

This glass met with immediate public favor, which, in turn, created a demand for a glass of greater illumination, one that could be used more successfully on the water and in dull weather. This demand has been met by them with the Stereo-Visioscope, the ideal glass for yachtsmen. The Stereo-Visioscope has been refined and improved until it does not suffer in any essential particular with any binocular on the market, no matter what the price or make.

Frills and non-essentials have been eliminated, and a glass produced of simple optical elegance, complete in every detail, with solid sole leather case and the necessary shoulder straps to carry the glass, either with or without the case. They have left no stone unturned to produce a glass of undisputed optical value at an exceptionally moderate price.

Wilson and Silsby Sails.

Every man who has sailed his own boat realizes the value of correct setting sails and how much they add to his boat's success in racing. Wilson & Silsby, of Rowe's Wharf, Boston, Mass., are probably the best known, as well as the oldest, house of sailmakers in this country. Their sails are seen on more racing yachts than those of any other firm. That they are cut on the correct principle of draft is attested by the long list of prize winners which have been equipped with their sails. This includes such schooners as Elmina II, Dervish, Shiyessa IV, the sloops Winsome, Dorello, Mimosa II, and the new Class P. boats, as well as boats on the Pacific Coast and Great Lakes.

Columbian speed propeller and universal propeller strut.

Columbian Propellers.

The Columbian Brass Foundry, of 208 North Main St., Freeport, Long Island, N. Y., manufacturers of the Columbian Speed Propeller are adding to their line this year a new propeller, to be known as the Columbian Rocket Propeller which promises to become a very popular wheel the coming season.

The company has one of the largest lines of patterns for motor boat propellers in this country, if not in the world. Wheels may be had suitable for any type of boat from a racing canoe up to a large tug boat. They come in all sizes and styles from 10-inch diameter up to 48 inches.

The Columbian Universal Struts have been improved this year by the addition of anti-friction bushings in the bearings, which may be easily replaced when worn, so that the struts can be used for years by merely renewing these bushings. The Columbian Foundry also make an exclusive line of motor boat accessories, including Manganese Bronze Rudders, Rudder Ports and Shoes, Stuffing Boxes, Couplings, etc.

Splitdorf Magnetos.

C. F. Splitdorf of Walton Avenue, New York, is the manufacturer of the Splitdorf magneto, the Gem type marine coil and other ignition appliances for motor boats. The quality and reliability of the Splitdorf magneto has been proved during the past season by the championship boats equipped with Splitdorf magnetos. The famous Peter Pan IV used a Splitdorf and some of the prizes which she captured were the Championship of the Hudson River; a Record Breaking Performance in the Poughkeepsie and return race ,the Time Prize at Ossining, N. Y., and many other events.

The Splitdorf ignition system is known for its constant juicy spark, and it does not matter whether you own a speed boat or little "kicker" as auxiliary power, you will find Splitdorf ignition there with the goods. C. F. Splitdorf has branches at 1679 Broadway, New York, and in Chicago, San Francisco, Detroit, Boston, Los Angeles, Kansas City, and a number of foreign countries.

All Kinds of Canvas Work.

John Curtin, 4 South Street, New York, not only makes yacht sails, but also outfits for motor boats and all kinds of canvas work from awnings, and spray hoods which are guaranteed to keep water out, to skylight covers or boat covers for keeping boats snug during the winter. Many prize winning yachts on Long Island Sound and Gravesend Bay can attest the correct cut and durability of Curtin sails.

Michigan

FAMOUS MICHIGAN SPEED WHEELS REVERSE GEARS & MARINE HARDWARE

LET US SAVE YOU MONEY

Supposing you bought a propeller wheel and you could not get any speed out of it, or a reverse gear that gave you all kinds of trouble These things may not have cost you much and you thought you were saving money, but before you get any pleasure out of boating you would have to get a new equipment.

Now in selecting your wheels, reverse gears and marine hardware, get the best there is The best is always the cheapest in the end. The Michigan line is a well-known Standard line, the most complete and of the best quality The prices are the lowest when you take into consideration quality, and when you buy the Michigan line you won't have to buy again

You cannot buy a faster wheel than the Michigan or a better reverse gear or a better line of marine hardware, such as steering wheels, canopy tops, underwater exhausts, propeller jacks, accumulators, air pumps, chocks, cleats, stern bearings, stuffing boxes, in fact, everything for boat and engine

It will save you money to send for their large catalog and purchase the famous Michigan line of goods, they will guarantee you entire satisfaction

MICHIGAN WHEEL COMPANY, 563 Canal Street, Grand Rapids, Mich.

JEFFERY'S MARINE GLUE

THE PURPOSES FOR WHICH THE VARIOUS GRADES ARE INTENDED:

For Deck and Hull Seams of Yachts and Motor Boats
—USE—
No. 1, Extra Quality

Black, white, yellow or mahogany color. Give black the preference: it is more elastic and satisfactory in every way.

Specified by all first-class designers, and used exclusively by all the prominent builders.

For Waterproofing Canvas, For Covering Decks, Tops of Cabins, Canvas Boats and Canoes
—USE—
No 7, Soft Quality

Black, white, or yellow. It not only waterproofs and preserves the canvas, but attaches it to the wood, and with a coat of paint once a year will last as long as the boat.

Waterproof Liquid Glue is used for the same purposes as Number Seven Soft Quality

Also in combination with calico between the double planking of diagonally built boats.

It is ready for use and requires no heating; simply open the can and paint it on like ready-mixed paint.

This glue will also attach cork, felt, rubber, leather, and linoleum to iron, steel, or wood.

Special Marine Canoe Glue

Best filler for Canvas

Our 25c. emergency cans made a big hit. Every canoeist should carry one; it is as valuable to him as a repair kit to a bicyclist or automobilist.

It is a Johnnie-on-the-spot article that no boatman should be without. Sent by mail on receipt of 30 cents in stamps.

FOR SHIPS' DECKS USE { No. 2, First Quality Ship Glue / No. 3, Special Navy Glue

All put up in 1, 2, 3, and 5-lb cans; also 14, 28, 56, 112-lb. boxes either tin or wood

INSIST ON HAVING THE *RIGHT* KIND IF YOU HOPE TO OBTAIN SATISFACTORY RESULTS

The largest dealer in your town carries this in stock; if not, he should. Tell him to write us for the agency. AGENTS WANTED EVERYWHERE.

For Sale by all Yacht, Boat and Canoe Supply Houses and Sporting Goods Dealers. Send for Samples, Specimens, Circulars, Directions for use, etc.

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Sails That Win

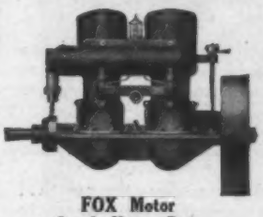
AWNINGS and COVERS that fit and keep the water out.

We make everything, made of canvas, for motor and sail-boats and make it well

You will find our prices right

John Curtin, Inc.

4 South Street, New York City



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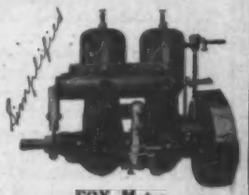
2 cyl. Heavy Duty

FOX MOTORS
—1912—
22 Sizes
3½ to 90 H. P.



FOX Motor
2 cyl. Medium Duty

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SPECIALS	HEAVY DUTY	MEDIUM DUTY	DE LUXE
2 Sizes	4 Sizes	7 Sizes	9 Sizes

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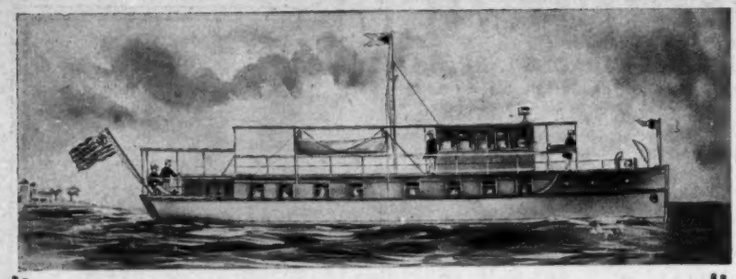
NEW ORLEANS: C. B. McCrocklin, 121 N. Carrollton Ave.
SEATTLE: Manny Meyers, 520 First Ave., South.

WILSON & SILSBY

SAIL MAKERS

ROWE'S WHARF, BOSTON, MASS.

(See page 161 for continuation of To Baffin Land in a Motor Boat.)



THE 70 FT. HOUSEBOAT LANAI

Designed by us and just completed in our yards, is another example of the

MANY ADVANTAGES OF OUR SPECIALIZING ON HOUSEBOATS AND CRUISERS OF 60 TO 120 FT.

No 70-ft. houseboat ever before had such excellent lines, so large and comfortable a living room (18 ft. long) and such large, fine staterooms (three in number). The ideal combination of comfort and ability to go anywhere.

Our establishment is advantageously located—its connection with a ship yard of long and favorable reputation assures you of highest skilled workmen and best materials.

A low overhead cost—a large purchasing capacity—the practical elimination of the slack seasons that raise the operating costs on nearly every yard devoted exclusively to pleasure boats. It is small wonder that the Mathis estimate is usually most moderate.

Write for houseboat booklet.

MATHIS YACHT BUILDING CO.

SPECIALISTS IN 60 TO 120-FT. CRUISERS AND HOUSEBOATS

Front and Erie Sts. Camden, New Jersey

1 to 3 Miles Per Hour Increase Guaranteed

Many a motor is being blamed for lack of power, many a boat for lack of speed—merely because they are not equipped with efficient propellers. Before you replace your motor or sell your boat, give it a fair chance with a B. & B. Propeller.

The surest way to secure maximum speed from any boat is to fit it with a genuine B. & B. wheel in the first place. Don't take chances or handicap your boat with anything else.

Whenever you have occasion to buy or specify a propeller, whether it is for an old boat or a new one, remember our standing guarantee, five years old, to increase the speed one to three miles per hour with the B. & B. wheel.

Look for our name stamped on the hub of every genuine B. & B. Propeller and don't be misled by substitutes that look nearly like it. Even if they were cast from identical patterns, no substitute would be equal in material, finish or durability.

Bryant & Berry Company

29 West Atwater Street, Detroit, Michigan

Orson, 56-foot cruiser built by Milton Boat Works.

A Fine Product of the Milton Boat Works.

One of the most interesting boats of the year is the motor cruiser Orson, designed by H. W. Patterson and built by the Milton Boat Works of Rye, N. Y. This handsome vessel is 56 feet 6 inches overall, 11 feet 2 inches beam and draws 3 feet 8 inches. A 25-H.P. Standard motor drives her over 10 miles per hour. She is an excellent sea boat and remarkably roomy.

The bridge deck, with cushioned seats and wicker chairs affords an ideal lounging place for fine weather, while the arrangement below decks is remarkably well worked out. The owner's stateroom is forward with a toilet room connecting. This room is fitted with a wide berth, a sofa that may be extended to form a bed, dressing table and lockers, and is reached by a companionway from the deck. Abaft this comes the engine room with berth, work bench, wash basin and lockers.

Next is the galley, with coal range, sink, dish racks and the usual fittings, and a large ice box. From the galley bulkhead aft, is given up to the guest's quarters. Wide seats, with upholstered backs, may be extended to form four berths. Gun lockers, buffet, dressing case and lockers occupy the corners, and lockers with leaded glass doors alternate with alcoves along the sides. The finish is mahogany carefully selected. The engine room galley and owner's toilet have air ports in the side of the boat. A box skylight gives light and air to the forward quarters.

This company also builds a 31-footer of 8 feet beam which is a most satisfactory cruiser for two people. It is arranged to give the maximum of accommodation and the amount of space in this boat is remarkable, every inch being utilized. She has toilet room forward, a fine main cabin and galley and engine space. The cockpit extends out to the side and is long enough for outdoor sleeping in warm weather.

The workmanship on the Milton boats is uniformly high class and the designs are carefully thought out. Mr. Patterson, the naval architect, has had a long and varied cruising experience and is thus able to insure the maximum of comfort to the owner fortunate enough to possess one of the boats from his boards.

Monitor "Knock-Down" Boat Frames.

In space 216 at the Boston Show, Monitor Boat and Engine Co., of Newark, N. J., manufacturers of Knock-Down boat frames, and material exclusively, will exhibit a line of models of cruisers and open boats, showing various types and styles, and of finished models and model frames. These show clearly the details of construction, so that a prospective purchaser can see readily from an examination of these models, the full method of building from the frames which this company sends out, and (from the miniatures), the appearance of the boats when finished.

Up-To-Date Sailmakers.

The popularity of the sails, spray hoods, awnings, etc., made by G. W. Robinson & Co., of City Island, N. Y., is constantly increasing. These goods are used in all parts of this country and in many foreign ports. Robinson sails have attained a recognized high standing in racing circles on Long Island Sound and adjacent waters and are becoming favored in the Pacific and Lake racing centers. The spray hoods built by this firm, though moderate in price, are well made and extensively used.

While specialists in the designing and making of sails and spray hoods, G. W. Robinson & Co. manufacture everything in the canvas line and fit out a great many motor boats and steam yachts with awnings, covers, etc. A factor in the popularity of Robinson goods aside from good material and workmanship, is the fact that the members of the firm are experienced yachtsmen. This means that the design of the Robinson products is such as to insure absolute satisfaction under practical sailing conditions.

Any inquiries addressed to G. W. Robinson & Co., City Island, New York City, on anything in the sailmaking line will receive prompt and careful attention.

THE STAR AIR PUMP

With split cam and hinged boxes can be attached to propeller shaft without uncoupling the shaft. Stroke 1½ inches, bore 1½ inches. This is the most compact air pump made. It is entirely out of the way, and the throw of a small lever puts it into action, or stops it, while the engine is running.

No appreciable extra power is required to operate.

The whistle can be blown at thirty seconds after starting up the engine. It will pump a 10-gallon tank up to 60 pounds pressure in ten minutes, with the engine making 450 revolutions per minute.

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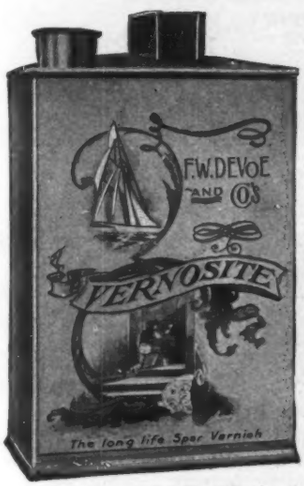

Columbia Yacht White

HEAT-RESISTING ENAMELS

For ENGINES, MOTORS and RADIATORS

MADE BY

F.W. Devoe & C.T. Raynolds Co.

FOUNDED 1754

114 DEVOE BLDG., NEW YORK

Nothing But Words

When a manufacturer is forced to talk *around* his product instead of *about* it, it's a dead sure sign that there's something *wrong* "in the works."

We don't rely on *sophistries* and *flattery*.

We don't have to coddle the *vanity* of snobs to sell the *Stewart Speedometer*.

We *prove* that it's the *best* speedometer that's ever been made.

We *tell why* and we can *guarantee* every "why."

We give the *guarantee* because the Stewart *doesn't give out*.

Made in the world's *model* speedometer factory.

Every part *crafted* like a watch.

Turned out by *automatic* machinery.

If it weren't the best of any, it wouldn't be used by so many.

On *four* cars out of five.

"ALWAYS ON THE JOB."

Stewart Speedometers are attractive—beautifully made—open dials—large figures—easily read—absolutely accurate; 100,000-mile season odometer; 100-mile trip register; can be set back to any tenth of a mile. Strongest flexible shaft, drop forged swivel joints (an exclusive feature), quiet road wheel gears.

Speedometers . $15 to $30
Clock Combinations $45 to $70

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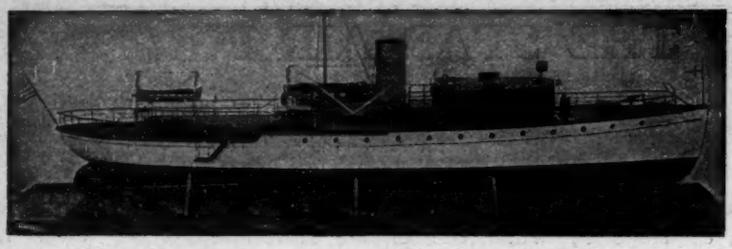
FOR MARINE MOTOR LUBRICATION

"It Makes a Difference"

MORE SPEED with SAME POWER

INSURES SMOOTH and REGULAR RUNNING

Consult YACHTING'S Information Department on any of your problems. Its service is absolutely free.



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MARINE MODELS A SPECIALTY
INVENTIONS DEVELOPED · PATTERN MAKING
SPECIAL MACHINERY DESIGNED AND BUILT

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FIRE EXTINGUISHER

Approved by United States Steamboat Inspection Service and Motor Boat General Insurance Agencies.

The *only* effective ones for motor boats. Get booklet or free demonstration and learn *why*.

PYRENE MANUFACTURING COMPANY
1358 Broadway, New York

A Special Word or two for Manufacturers and Advertisers

Even a casual glance through this issue will impress upon you the fact that it is undoubtedly the best balanced, finest looking and most interesting and useful issue of YACHTING editorially ever published.

We submit it, and the plans carried out in connection with it, as evidence that we are DOING things.

This issue shows a 17 per cent. gain in advertising over February a year ago.

The March issue will be the New York Show Number.

It offers you exceptional circulation, editorial and advertising value.

If you are interested in securing what is unquestionably an unusual sales and prestige-making opportunity, you ought to know the details regarding it.

We will gladly send them on request.

Yachting
122 S. Michigan Avenue, CHICAGO
141-145 West 36th St., NEW YORK

R. T. FRENCH,
Advertising Manager

MONARCH SLIDING HOOD
Brass Frame and Fixtures

Here is the hood for *your* yacht or boat. Can be raised or lowered in ten seconds. Handsome, durable. Specially tempered brass tubing frames fitted into canvas pockets. Holds its shape. Made of *standard* Government Army Khaki duck—warranted waterproof. Prices reasonable for all lengths.

Illustrated descriptive catalog shows buoyant Pneumatic Mattress and Cushions, Acme Floss and Cork Filled Cushions made to conform with the Requirements of the New Law, Government Inspected Life Preservers, Ring Buoys, Mooring Buoys, Rope and Canvas Fenders.

Get catalog of
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and
LIFE-SAVING
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(See page 163 for continuation of First St. Louis Motor Boat Show.)

Bayonne Launches For 1912.

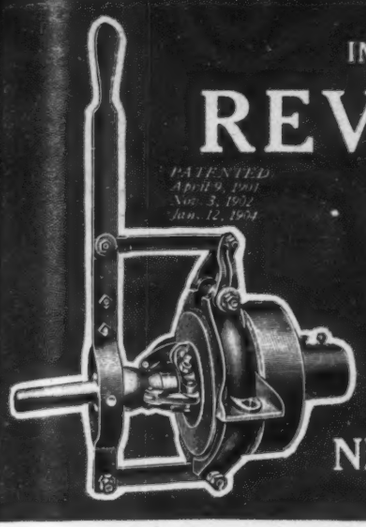
The Bayonne Launch Co., of Bayonne, N. J., builders of all kinds of launches and cruisers, have added to their line of boats a new model for 1912 which should make a special appeal to the man looking for an able, useful and fast runabout. This is a 25-foot boat designed by M. M. Whitaker of New York, having a beam of 5 feet and draft of 2 feet and equipped with a 12-H.P. Eagle engine turning up 700 r. p. m., with which she is capable of a speed of 12 miles an hour. The boat is laid out with the engine in the forward end, under a hinged hatch, the cockpit being protected by an automobile canopy top. The boat has fine lines and will prove a useful little craft for running about or daily use.

Devoe & Raynolds Paints and Varnishes.

It will soon be time to think of fitting out, and even now boat owners are spending their spare hours around the yards overhauling their craft preparatory to the spring clean-up. These will do well to bear in mind that good paint and good varnish do more toward preserving a boat and keeping her looking well during the season than any other one thing. For that reason a little booklet published by Messrs. Devoe & Raynolds, 101 Fulton Street, New York City, containing full information as to the value of the different paints and varnishes, and information concerning their paints in particular will be interesting.

Stewart Speedometers.

The Stewart & Clark Manfg. Co., of 1921 Diversey Boulevard, Chicago, are placing on the market some of their attractive speed recorders in the Stewart Speedometer. This is absolutely an accurate speedometer that has the guarantee of Stewart & Clark behind it. Every part is made like a watch and it is turned out by automatic machinery so that it is absolutely accurate. It has an open dial, large figures and is easily read. The prices range from $15 to $30. The Stewart & Clark Co. also manufacture a speedometer and clock combination mounted on the same arm and fastened to dashboard. This is a very useful combination as it gives both the time and speed at a glance. This clock combination lists from $45 to $70.



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To Baffin Land in a Motor Boat

(Continued from page 91)

which disappointed us greatly, since all the high land about Mugford Tickle was cut off from view. As one looked straight up the black cliffs of trap rock to the point at which they disappeared in cloud and mist, it made him feel very insignificant—like fleas adrift on a straw, to quote the Chief. Once through the tickle, Daryl was back on the open sea. No more sheltering islands after this.

For an hour, possibly, we sped North, with fair wind and tide along the cliff foot, until it became too thick to see the next point of land. George was getting a little vague on his geography now, and the chart was virtually useless for any detail, so I did the fisherman's trick and ran her in shore for the nearest hole. This appeared to be a splendid find when we first entered it. (Log)—"run in and anchor in old glacial cirque—wonderful place—we lie in center of amphitheatre with immense cliffs rising sheer to altitude of 2,000 feet on three sides. The 4th is blocked from sea by small island, perfect harbor from anything but northeast; small ranger seals playing about. Bob and George each shoot one, but they sink before we can get to them."

I remember that even while I was writing this, George sang out for me to come on deck, and, at the same time, the rigging began to hum. I found half of our little harbor white with a squall, so fierce that one could hardly stand against it. Daryl at once began to drag, and would probably have gone ashore in spite of both anchors, if the wind had not suddenly veered straight around, at which we started dragging out to sea. This puff was soon over, but in a few minutes a second miniature tornado burst down off the cliffs and we started on another tour of the cove. Far overhead, great fog-clouds swirled and poured over the hills till one fancied himself at the bottom of a huge Devil's cauldron—not a bad name for the place.

All hands soon got sick of our ship's peripatetic habits—you never could tell which way she would drag next—so I told Abe to cut out the lunch, and, instead of eating, we got under way and went plugging out to sea once more. The glass meantime, had been falling rapidly and we ran into a very fresh southwest wind and a rising sea outside. Down to leeward it was thick as pitch, so, greatly to my disgust, I saw we should have to buck wind and tide back to Mugford tickle for a sure harbor.

It was a long, hard thrash, but a good test of boat and engine. We made the tickle shortly before dark and anchored under the lee of a small point on which there was an Esquimo summer encampment. Some of the people came aboard, and as it was a dirty, cold night, I let as many as could, crowd down into our little cabin. While we were conversing with our guests, we felt the Daryl suddenly taughten up on her chain and keel over to starboard. The old chief, or head man of the Esquimo, spoke to George and started for deck. "He says it's hauled, and going to blow like hell from the northwest, and that we can't stay here," George interpreted.

Alas, it was too true! this sudden shift had placed us directly upon a lee shore. But where to go? Here we were on a high, wild coast, in a pitch-black night, in the midst of a gale of wind and rain, and with not a lighthouse or buoy or even a chart worthy of the name to go by. In this extremity I cast myself upon the mercy and intelligence of our friends, the ever cheerful "huskies."

"Ask him what to do," I said to Ford.

George speaks Esquimo very fluently, so, after a little parley, it was decided that one of the natives would pilot us to a good anchorage "not

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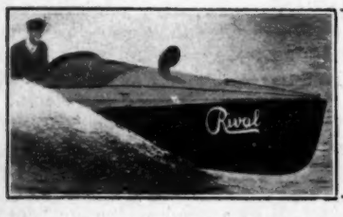

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far away." This might mean anything from half a mile to a dozen, but there was no time for idle discussion.

Bob got his torches going on the cylinder heads and while he was warming up the engine I took the others and a couple of "huskies" and started to shorten in somewhat on our cable, of which there was a great scope out. Suddenly it began coming home on the run and I knew that the anchor had lost its hold on the treacherous, rocky bottom. Daryl immediately slewed broadside to the wind and started off for shore. Everything now depended upon the engine's starting quickly.

"I don't believe she's hot enough yet," said Bob coolly, "but we'll try." He shoved over the throttle, gave the priming pump a couple of quick jabs and heaved the old fly-wheel up against compression. It was a very anxious moment, but she responded with a roar, and as Bob threw in his clutch I took the wheel and shouted to those forward to get their anchor aboard. As soon as this was done the extra "huskies" jumped overside into their skiffs, and we raced off into the darkness, with George and the native pilot on the cabin-top.

After a while, George told me to let her come to port. I swung through an arc of about 30°, when the "husky" spoke—"Steady," says George.

"How the devil does he know?" I asked, "he hasn't even *looked* at the compass?"

"He just knows; that's all," George explained.

A few minutes more, and we were in smooth water. Of a sudden, while I was peering ahead for the land, it loomed large overhead. "Now, stop her!" George shouted; "this is Anchorstock Cove; fine holding-ground, mud bottom."

We anchored with spread cables and soon all hands were below, enjoying a mug-up of fine hot cocoa, after which, we turned in for a peaceful sleep and let the gale howl itself sick outside. Confidence had been rewarded.

(To be Continued)

Rigging Tiller Leads

(Continued from page 112)

to give the tiller room to swing without stretching the tiller ropes, and also to allow greater leverage when hard over.

If a cotton tiller line is used it is apt to be affected by damp and dry weather and is hard to keep taut. The best method for keeping it tight is by means of a turn-buckle. In fact a turn-buckle is the best method for keeping any tiller rope tight and it should be placed where it will not come in contact with any sheave or fairleader. Or, you can splice a thimble in each end of the tiller rope and lash them together with marlin, taking up the slack as often as necessary. In large boats where it is desired to gain power a purchase can be arranged by leading the ends of the tiller rope through blocks in the end of the tiller, and making them fast to a staple or eye bolt as in Fig. 7. This gives double the purchase but, of course, at the cost of double the distance, and necessitates a larger drum on the wheel or more turns to get the wheel over.

It may be desired to have two points from which the steering may be done. If the boat is a small one and a side lever is desired it can be best obtained by means of a quadrant placed perpendicularly on the side of the boat under the cockpit coaming, over which the tiller rope is led, the rope being cut and one end leading over each sheave of the quadrant. A handle can then be fastened to the quadrant for operating. This is better than a straight lever, as it does away with the slack in the tiller rope which a perpendicular lever is bound to cause when it is moved out of the perpendicular. A good form of side quadrant

gear is shown in Fig. 1.

On a large cruiser where it is desired to have a wheel forward and one aft the leads may be arranged as shown in Figs. 8 and 9. In the former case the lead for the after wheel is attached direct to that of the forward wheel, and as a consequence both wheels turn when either one is used. In Fig. 9, however, which is more practical for a good sized boat where a purchase is needed, the after wheel is connected with the forward one by the same lead, which works through a traveling block in either end of the standing part of the lead from the quadrant. In this way a double purchase is obtained and only one wheel turns at a time, the wheel not in use being held in place by a couple of stout beckets. The traveling block must also be supported. There are a number of right angle turns in this plan and something is lost by friction, though it would be very practicable for fairly large boats where a mechanical gear is not required.

First St. Louis Motor Boat Show

(Continued from page 119)

of the Electric Launch Co., of Bayonne, N. J., and their famous little 16-footer The Bug, in which Albert E. Smith cut rings around most of the Eastern flyers last summer attracted a great deal of attention. The exhibit also contained a 35-foot Elco express with a guaranteed speed of 24 miles an hour. The Elco standard of construction was greatly appreciated by Western builders and owners alike.

The Dean Mfg. Co. showed the hull of their flyer Br'er Fox, which made the long run from Cincinnati to New Orleans at a rate of over 29 miles an hour, as well as a full line of their Fox de Luxe motors. Other boats seen were the Reliance V, a successor to No. IV of the same name which made such a racing record last summer; the Water Wizard, a new 20-footer in which "Baldy" Ryan expects to trim everything in that class this season; and a number of smaller open craft of all models.

The Sterling Engine Co. displayed for the first time their new 8-cylinder lightweight racing engine which they are putting out this year, one of which it is understood will go into a new Disturber this summer and "burn up" the racing courses. Besides this they had a line of other models, in heavy, medium and high speed types.

The Van Blerck Eng. Co. showed some of their larger models of high speed engines which made a name for themselves in racing last year.

There was a large herd of Buffaloes, corralled under the care of Mr. Hauser of the Buffalo Gasolene Motor Co., ranging from heavy duty to speed models, that attracted much attention from those who know.

The Erd Motor Co. had a number of models of their engines on hand and the Wisconsin Machine and Mfg. Co. exhibited 7 models of Wisconsin Valveless Motors from 3-H.P. up.

Valentine and Co. had a large exhibit to demonstrate to Western boat owners the value of their spar varnish—Valspar.

Geo. B. Carpenter & Co., of Chicago had a large and interesting exhibit of marine hardware and motor boat accessories that kept a crowd constantly around their booth.

The Waterman Marine Eng. Co. showed their various models of marine engines, including their canoe and "Porto" outboard motors.

Planking for the Motor Boat

(Continued from page 111)

The tendency of the day is to over-power motor boats in the effort to get greater speed; and this means that greater attention must be given to the construction of the hull. The extra vibrations of a big engine must be compensated for in some way. In the last few years architects have been building light, thin hulls that will stand up remarkably well under the violent vibration of heavy, high-speed engines. The amateur, however, is apt to overlook the necessity of building better hulls if high-power is to be used. A hull designed for a 10-H. P. engine may quickly deteriorate when a 20-H. P. engine is placed in it. In designing and building a hull, one should be specific about the engine power to be used. If this were always done, there would be fewer cases of dissatisfaction.

Engine Troubles That May be Avoided

(Continued from page 106)

to furnish sufficient oil to the engine. It has been stated that over 98% of all of the *serious* gasolene engine trouble is caused by neglecting the lubrication.

Each engine manufacturer has his own particular method of supplying lubrication. Some use the splash system entirely, which depends on the connecting rod dipping into a supply of oil in the crank case at each revolution and splashing the oil to the various parts. Others combine the splash system with a mechanically operated oil pump or a pressure feed oiler with a number of feeds or tubes leading to the different parts. Still others use the mechanical oiler or pressure feed oiler entirely.

Where the splash system is used, grease cups are usually used in connection with it to lubricate the crank shaft although there are a few exceptions. In cases where the mechanical force feed oiler is installed it is the rule to oil all of the moving parts by this means.

Only the best grades of gas engine libricating oil should be used as it is far the cheapest in the end and will cause less trouble. Oil is much less expensive than engine parts. The oiling system should be so adjusted that when the relief cock is opened a thin bluish smoke will be seen which will indicate that the proper amount is being fed to the cylinders. Eight to ten drops should be furnished to the bearing in slow and medium speed engines and ten to twenty drops to the high speed types.

Water Circulation—In many cases connections between the water scoop and the pump are made by a short length of rubber hose, and wherever this is done care should be taken not to abrade the inside of the hose, and clamps should be placed at each end to secure it firmly. Bends or twists should be carefully avoided, as in a short time the suction of the pump drawing the water through the hose may cause the walls to collapse and greatly reduce the size of the intake or shut it off altogether. The water connections from the scoop to the pump should be made with care to prevent leaks, as these will not only allow the water to leak into the boat, but when the engine is running will also allow much air to be taken in, and may cause the pump to lose its suction, which is a serious matter as the engine will then heat-up.

There are two other troubles that may occur. One is loss of compression. To locate, close the relief cocks, turn over the fly-wheel, bringing the piston near the top of the cylinder; hold it there a few moments, and if the resistance decreases it indicates a loss of compression, which may be caused by the piston rings becoming gummed or coated with carbon so that they stick fast in their grooves and do not touch the cylinder walls. This can be overcome by pouring a small quantity of kerosene into the cylinder, which will loosen the gum.

This loss of compression may also be caused by a broken ring or rings which can be remedied entirely by putting in new ones.

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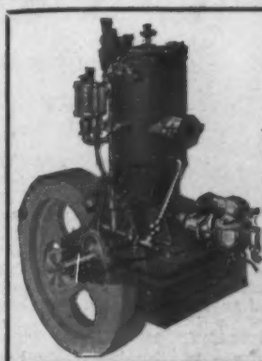

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